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ABSTRACT

Part of a research project for the investigation and development of techniques for the analysis of curriculum materials, this document explores possible roles and goals for curriculum analysis in Great Britain, Germany, Sweden, and the United States. The methodology of the project includes four main types of activity: (1) reading, consultation, and reflection; (2) producing analyses of different types of curriculum; (3) teaching curriculum analysis to experienced teachers; and (4) conducting one-week workshops for people without any background in curriculum. The focus of the project is on curriculum analysis of materials for either pupil or teacher which have a significant influence on decision making at the curriculum level. Following the introduction of the project and its rationale, the second chapter sets out to define curriculum analysis and its relation to curriculum evaluation, curriculum criticism, preservice teacher education, and inservice education. Chapter three includes a review of published schemes for the analysis of curriculum materials from several countries. The fourth chapter examines the Sussex scheme which was developed from the investigation of the other curriculum analysis systems. The final chapter presents the training process of curriculum analysis. (Author/JR)

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The Analysis of Curriculum Materials

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THE ANALYSIS OF CURRICULUM MATERIALS

CONTENTS

		Page
Chapter 1	Introduction	1
Chapter 2	Roles and Goals for Curriculum Analysis	11
Chapter 3	A Review of Published Schemes for the Analysis of Curriculum Materials	32
	Summary Table	54
	Schemes	55
	Appendices	80
Chapter 4	Introduction and Guide to the Sussex Scheme	85
	The Sussex Scheme - Complete Version	103
Chapter 5	The Training of Analysts	109
Bibliography		118
Glossary		122

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Foreword

This publication is a slightly modified version of the 'Handbook for the Analysis of Curriculum Materials', which resulted from a two year research project funded by the Volkswagen Foundation. The project has been based at the Centre for Educational Technology, the University of Sussex, but throughout we have benefited from the advice of many colleagues in other institutions. In particular we should like to thank the following:

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Dr. Michael Eraut
Mr. Len Goad
Mr. George Smith

April 1975

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CHAPTER 1: INTRODUCTION

The International Interest

For the last two years, with the generous support of the Volkswagen Foundation, we have been investigating and developing techniques for the analysis of curriculum materials. Although based at the University of Sussex and working primarily in the English context, we were concerned from the outset to explore possible roles and goals for curriculum analysis in other countries, especially Germany, Sweden and the United States. During the first year we collaborated closely with the Deutsches Institut für Fernstudien at Tübingen; and throughout the project we have had regular consultations with German colleagues. In the second year we visited Sweden to discuss similar work at the National Board of Education (cf. Nyström, 1974); and we have also greatly benefited from the advice of many experts who have visited us at Sussex.

Our reasons for the international focus were twofold. Firstly, we wished to draw on the experience of other countries in the field of curriculum and to consult with experts outside the U.K.; and secondly we believed that curriculum analysis could play a fundamental role in the communication of curriculum ideas at the international level. Curriculum materials which are not themselves transferable often contain ideas of considerable potential for other curricula and other contexts; and an analysis could serve as a vehicle for the transmission of those ideas. Analyses could also provide important evidence in those situations where transfer or even translation was being seriously contemplated. We therefore hoped that it would prove possible to devise an approach which would be internationally usable and acceptable, capable of analysing context - specific and culture - specific curriculum materials without imposing nationally - biased evaluation criteria.

We already believe that the decision to consult at an international level was fully justified. We have been able to use and benefit from the work of German, Swedish, Swiss and American colleagues; and to submit our own early work to their criticism. But the role of curriculum analysis at an international level has yet to be investigated. We have not embarked on any international dissemination activities in order to test hypotheses about the potential of curriculum analysis, nor do we believe that we should attempt to do so without further consultation and

cooperation with international agencies. However, we hope that this report has prepared the ground for further work of this kind. Our consultations hitherto, which have included Asia and Australasia as well as North America and Europe, have led us to take an optimistic view. Because, although there will always be different views on the most appropriate approach to curriculum analysis, we see little evidence that these are likely to be related to national differences.

The Project's Methodology

The project's methodology has been essentially practical; and we have relied throughout on the continual interplay between four main types of activity.

1. Reading, Consultation and Reflection - aimed at deciding what kind of activity curriculum analysis should be. What should be its purpose? What should an analysis look like? What guidelines could we offer intending analysts?
2. Producing Analyses of different types of curriculum material, selected both for their variety of form and content and for their interest to teachers. We have analysed traditional textbooks, packaged science curricula, reading schemes and humanities packs; some with only pupil materials, some with only teacher materials and some with both. These practical tryouts of our ideas have led to many modifications in our approach to curriculum analysis; and, at the same time, have provided us with sample analyses which we have used both as a form of guidance to intending analysts and as a method of communicating our approach to colleagues in education.
3. Teaching Curriculum Analysis to a group of experienced teachers, lecturers and advisers on an M.A. course, who were also required to submit an analysis for assessment. This challenged our assumptions, tested the communicability of our ideas and provided further sample analyses.
4. Conducting 1 Week Workshops for teachers, teacher-centre wardens, lecturers and advisers. These workshops have been run in several parts of the U.K., mainly for people without any background in curriculum study. The participants were allocated to small groups on the basis of their interests, and each group was required to analyse a particular set of curriculum materials. Most of the time was spent in discussing and writing rather than listening, with the project team acting as tutors. These workshops were a further test of our

ideas, and also led to many modifications in our approach. They also gave us an opportunity to assess the worth of curriculum analysis as an in-service activity.

All four types of activity were concurrent rather than consecutive and they influenced each other in several ways, sometimes consciously and sometimes, we suspect, unconsciously. What we were engaged in was partly research and partly development, but we were following neither a hypothesis-testing model of research nor an objectives-first model of development. The experience was more like that of mapping a new territory with a few sketchy charts; and we soon found that the charts of curriculum theory gave us very little guidance for navigation on the ground.

In retrospect, the most fascinating aspect was the interplay between questions of validity, which tended to be emphasized in the consultation and the preparation of sample analyses, and questions of pedagogy, which became crucial in the M.A. course and the in-service workshops. Consider for example, the problem of evaluation criteria. Our reading soon indicated that it was impossible to be prescriptive about evaluation criteria, because literally hundreds of criteria can be derived from the education literature*; and to reduce them to a list of manageable length would involve both controversy and distortion. Then our sample analyses showed that most published criteria were too general to be applied in practice without making several intervening assumptions; and that these assumptions tended to vary from one curriculum to another, even if the criteria remained the same. Finally, we were becoming increasingly aware that a fixed list of evaluation criteria was pedagogically disastrous, because on the one hand 'expert' analysts felt insulted, whilst on the other 'trainee' analysts tended to accept advice without understanding it. So, at the same time as we were discovering that the idea of an agreed list of evaluation criteria was an illusion, we were finding that, in practice an evaluative issue developed and internalised by the analyst himself would be woven into the fabric of an analysis whilst issues imposed upon him from without were appended as uncomfortable extras. The innovation theorist's notion of 'token adoption' has its exact counterpart in curriculum analysis - token evaluation.

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* One book, Goodman (1966), lists 218 criteria for evaluating reading schemes, and none of them are trivial.

Before proceeding to discuss the detailed work of the project, it is important to explain some of the initial decisions which influenced the course of our work. These were made at the proposal stage and were not, therefore, treated as problematic. But we have had no reason to regret them and shall therefore engage in post-hoc as well as pre-hoc justification. Each of the following will be discussed in a separate section below.

The focus on decision-making at the part-curriculum level.
The decision to restrict ourselves to the analysis of materials.
The decision to work within the framework of an analysis scheme.
The decision to develop a single general scheme for all subjects and all ages.

The Focus on Decision-Making at the Part-Curriculum Level

We use the term 'part-curriculum' to refer to any significant segment of the whole curriculum, such as 4th and 5th Year History, Years 1 to 3 of Integrated Science, Initial Reading or Middle School Social Studies; and we have concentrated our analysis at this level because it is where most curriculum decisions are taken. Although the pattern of the whole curriculum can be important, especially where there is some form of subject integration, most curriculum materials are published to service a part-curriculum; and curriculum development projects usually take a particular part-curriculum as their 'sphere of influence'. Whether one approves of this segmented approach to schooling or not, it is impossible to ignore it; and all other workers in this field have also chosen the part-curriculum as the most useful level of analysis (though in the case of Häussler and Pittman, 1973, this is combined with an analysis of lesson units). We have, however, kept the 'whole curriculum' context in the forefront of our minds; and think it likely that our approach will promote rather than deter attempts to consider the pattern of the curriculum as a whole and the contribution of each part-curriculum to the broader aims of education.

For similar reasons, within the constraints of our original decisions to restrict ourselves to the analysis of materials, we chose to concentrate on curriculum materials, which we define as:

Materials for either pupil or teacher or both which have a significant influence on decision-making at the part-curriculum level.

This deliberately excludes those materials of relatively small scope and coverage (e.g. the odd filmstrip, booklet or set of work-cards), whose

use could only be said to influence decision-making at the level of the single lesson. But it does not, of course, exclude the consideration of 'typical lessons' as an important aspect of curriculum analysis.

The Decision to Restrict Ourselves to the Analysis of Materials

Our decision to concentrate on materials has been often criticized on the grounds that materials are virtually irrelevant to the curriculum in action. All the issues that matter are embedded in the teaching and any attempt to find them in the materials would be purely speculative. The traditional distinction between curriculum and instruction (cf. Johnson, 1967) is avoided by simply denying that there is such a thing as a curriculum. This view is irresponsible, if not dangerous, because it treats the value assumptions and pedagogic assumptions which are built into so many curriculum materials as either non-problematic or insignificant. Moreover, it regards the teacher as totally isolated from the context of his school, his profession and his community.

Not unrelated to this viewpoint is the criticism which suggests that focussing on materials must inevitably lead to an overemphasis on the 'curriculum' at the expense of 'instruction', with the result that the reality of the classroom is either ignored or forgotten. This is certainly not the case when the analysts are practising teachers; and even when someone outside the classroom is conducting an analysis it is often as part of a larger evaluation project in which observational studies are also included. The analysis of materials is only one kind of curriculum evaluation; and though we would argue that it is much neglected, we would never expect it to dominate other evaluation activities, merely to complement them. If it led to a decrease in observational studies of the curriculum in action we would be among the first to raise the alarm.

Then finally there are those who find us guilty by association with 'teacher proof' curricula, and are obviously unaware of the variety of curriculum materials currently available. These range from highly structured pupil materials, some of which have elaborate and prescriptive teachers manuals, through support materials with advice on possible patterns of use, to a few loosely connected suggestions for the teacher. We are prepared to examine all of them and do not necessarily favour those curricula

which assign important roles to materials. Indeed, later we hope to extend our research to include part-curricula in which materials play only a minor role or even no role at all.

Why then did we choose to concentrate on the analysis of materials? Firstly we wanted to extend the existing methodology of intrinsic evaluation (cf. Scriven, 1967); and secondly we anticipated that some of the techniques we developed for the organisation and presentation of argument and evidence would prove equally useful in analysing the results of observational studies. We were concerned not just to provide evidence but to relate it to a range of values, assumptions and options. In practical terms we felt that developing techniques for materials analysis was as much as could be handled in a single project. Their eventual extension to other areas of curriculum evaluation would have to wait.

Then thirdly we had strong interests in the use of materials analysis in teacher education, where we thought it had considerable potential as an activity for developing some understanding of curriculum problems and for linking theory with practice. Here again the convenience of using readily available materials as a vehicle for discussion was a special advantage.

Finally we found one special advantage in evaluating materials. Since materials can be treated as essentially neutral, it is acceptable for teachers to analyse those materials which they themselves are using without feeling threatened. This can then, in appropriately supportive contexts, lead on to an evaluation of their curriculum and teaching which would not have been possible with a more direct approach - an important point to which we will return again in Chapters 2 and 5.

The Decision to Work within the Framework of an Analysis Scheme

Before embarking on this project we had considerable experience of conducting analyses according to the Curriculum Materials Analysis Scheme* of the U.S. Social Sciences Education Consortium (Stevens and Morrissett, 1968); and, although not entirely happy with this particular scheme, we were convinced of the advantages of using a general scheme of some kind. So we set out to develop a scheme of our own to provide a framework for approaching curriculum analysis. But what did we see as the main advantages and limitations of analysis schemes?

* This scheme is outlined on pages 55 - 58 and discussed in Chapter 3.

The most obvious advantage of a good scheme is that, provided an analyst understands it, it ensures that most of the major issues are covered. Without a scheme, analysts tend to concentrate on their own areas of expertise and interest and to ignore the needs and perspectives of different groups of decision-makers. This broader coverage also helps to bring out positive aspects of materials and to counteract the tendency of many critics to emphasise the negative aspects alone. This is especially important in the field of curriculum where many decisions are based on compromise, and the positive and negative aspects are often interrelated.

A second advantage of a scheme is that it helps when two or more competing materials have been analysed in the same way; and, by clearly stating the questions as well as the answers, it also assists comparison with materials which have not been analysed but for which the reader can readily supply the relevant information.

Then, thirdly, a scheme can help by providing a structure which exposes the logic of an analyst's argument, shows the evidence on which it is based and elucidates the nature of his assumptions. This might on first acquaintance seem unnecessary, but in our experience it is the most important advantage of all. We have had far greater difficulty in arriving at an appropriate structure for presenting analyses than with checklists of analytic points and issues.

The disadvantages of using a scheme are less easy to discuss, because many of them are specific to particular schemes rather than characteristic of schemes in general. We discuss limitations of individual schemes later in Chapter 3, so here we will focus only on criticisms that are common. Two of these are diametrically opposed: some critics find schemes too restrictive, while others find them too open. The latter group expect a scheme to anticipate possible deficiencies in the knowledge and skill of the analyst by being highly prescriptive and very detailed. All its questions must be capable of being answered by all potential analysts, even though it reduces the level of analysis to that of the "lowest common denominator". We had little sympathy with this view as we were particularly anxious not to restrict the scope of a perceptive and penetrating analyst*.

* The question of who might be the analyst will be explored in Chapter 2. There are a number of situations, including some in which the 'analyst' will in fact be a group of people.

Moreover, since we were concerned with the training of analysts, pedagogic factors also had to be taken into account. The scheme had to be sufficiently flexible for intending analysts to accommodate it and to 'make it their own'. Otherwise there was a danger that it would either be accepted or rejected without any proper understanding of the thinking behind it. So we tried to make the scheme itself a framework for analysis rather than a conglomeration of techniques and criteria; and relegated much of the guidance we had to offer to an 'Introduction and Guide'*, where it could be presented in a much less prescriptive manner. We therefore rely on the analyst at least as much as any curriculum strategy relies on the teacher, possibly even more so. To do otherwise would be neither desirable, in view of the limited knowledge we possess on curriculum matters, nor feasible, in view of the likelihood of token adoption of the scheme. An 'analyst-proof' scheme would be as unsatisfactory as a 'teacher-proof' curriculum.

A more substantial criticism might focus on the danger of overkill, of making a mountain out of a molehill. We have certainly encountered this problem and one has to rely on the analyst's ability to use detail to substantiate important points rather than for its own sake. The worst offenders are those who would probably wallow in unnecessary detail anyway; and at least our scheme forces them to consider structural, strategic and evaluative issues to some extent. The problem can also be countered by the experienced reader who knows the scheme and can therefore use an appropriate skimming strategy to extract the information he needs in a relatively short time. This would be much more difficult for analyses which were not based on known schemes.

Lastly, there is the communication problem. Analyses organised according to schemes may be very convenient for the experienced reader but can easily dissuade the inexperienced or reluctant reader. Moreover some readers may be impatient with anything more than a short and simple document, while others demand sophistication and complexity. For each separate group there is a balance to be sought between the issues the group is prepared to consider and the issues the analyst or the authors of the scheme believe it ought to consider; and there are acceptable and unacceptable ways of presenting these issues. So we strongly recommend that, without removing any obligation from the analyst to be clear and succinct, the communication problem is treated separately from the analysis problem. Only when the analysis has been completed can one

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* This 'Introduction and Guide' is reproduced later in Chapter 4.

decide how best to communicate its results and whether or not abbreviated versions are necessary. To let the communication problem become paramount during the process of analysis itself could be inhibiting and limit the depth of the analysis.

The Decision to develop a single general scheme for all subjects and all ages

Once the idea of a scheme has been accepted, there remains the further issue of whether a single general scheme to cover all subjects and all ages is either feasible or desirable. Some would advocate subject-specific schemes instead. But we chose to concentrate on a general scheme for both ideological and practical reasons. We wanted to improve communication across subject boundaries and thus facilitate curriculum decision-making at the level of the whole curriculum; and whether or not such decisions resulted in interdisciplinary curricula, we thought it vital not to exclude such innovations from our field of study. More practically, any attempt to develop subject-specific schemes would have diversified our work and possibly reduced its quality. It could also have led to further segmentation within each subject field, i.e. not just to a scheme for Social Studies but to separate schemes for Elementary History, 'O' Level Geography, 'A' Level Economics, etc.

When we began the project, we had already extended the scheme developed by the U.S. Social Sciences Education Consortium (Stevens and Morrissett, 1968) to cover other subjects and age-levels without experiencing too much difficulty. So we were fairly confident that a single general scheme was feasible, in spite of the fact that most published schemes were subject-specific in origin, the Berkeley Scheme being developed for Elementary Science, the St. Gallen Scheme for Elementary Mathematics, the Häussler-Pittman Scheme for Science and the Swedish Scheme for Secondary Mathematics. Moreover, closer examination of these other schemes confirmed our position, because their subject-specific nature appeared to be limited to some of the finer detail and had virtually no effect on their major characteristics.

There are, however, a number of subject-specific issues of considerable importance, many of which have been neglected even by the subject-specific schemes; and we believe that these need to be brought to the attention of analysts. So our intention at Sussex has been to encourage the development

of subject-specific guides as supplements to our general scheme and general guide. We have done some preliminary work in one or two subject areas, but this is not yet ready for publication.

The Purpose of this Book

This book has two main aims. Firstly, to set our work in the wider context of curriculum study and to present and discuss the contributions of others who have illuminated the problems of analysing curriculum materials. Then, secondly, to help interested colleagues to understand and use our analysis scheme.

After this introductory chapter on the project's initial assumptions, Chapter 2 discusses roles and goals for curriculum analysis without any special reference to analysis schemes. Its purpose is to present some of the relevant literature, to establish the value of curriculum analysis as an activity and to indicate the great variety of uses to which it might be put. Four main fields of education are discussed: curriculum evaluation, curriculum criticism, pre-service teacher education and in-service teacher education.

Then Chapter 3 is a comparative review of seven published schemes for the analysis of curriculum materials, taken from Germany, Sweden, Switzerland, the United Kingdom and the United States. Though some were originally developed as subject-specific schemes, all seven are capable of use as general schemes. The chapter also explains and attempts to justify the theoretical and practical assumptions on which our own work has been based, many of which evolved during the course of the project as we discussed and experimented with various approaches. The seven schemes are reproduced at the end of the chapter, three of the longer ones in abbreviated form.

The last two chapters offer specific help to those wishing to use our own Scheme. Chapter 4 gives guidance on how to conduct an analysis within the framework of the Sussex Scheme, includes checklists of evaluation points, and incorporates the full version of the Scheme itself. Then Chapter 5 summarises our experience in running training workshops for potential analysts, suggesting how this task might best be approached and indicating what outcomes might realistically be expected.

The book then concludes with a Bibliography and a Glossary.

CHAPTER 2: ROLES AND GOALS FOR CURRICULUM ANALYSIS

This chapter sets out both to define curriculum analysis and to explore its potential in a variety of contexts. Though our initial definition will be somewhat imprecise, it is hoped that the chapter as a whole will progressively clarify what we mean by the term 'curriculum analysis'. In particular, we will attempt to answer three questions? What kinds of activity should curriculum analysis include. What goals should an analysis try to achieve? And what roles can a curriculum analysis have?

Curriculum analysis is difficult to define because the term 'curriculum' is itself problematic. One can plan, develop, change or evaluate a curriculum, but it is difficult to say what it is. Perhaps it is best characterised as the set of broad decisions about what is to be taught and how it is to be taught, that determine the general framework within which lessons are planned and learning takes place. These decisions are often undocumented; and even when they are documented there may be divergences between the curriculum as planned and the curriculum as taught. So which version is the true curriculum, and how does one analyse it? The issue is only resolvable if we regard the curriculum itself as indefinable. We can come close to describing it by collecting evidence about it, but there is no true version, no exact description. Strictly speaking it is never the curriculum itself that we analyse but the evidence about it. There are two kinds of evidence: documentary evidence in the form of plans or curriculum materials, which is usually readily available; and empirical evidence in the form of observations, opinions, etc., which requires special collection. Curriculum analysis can be based on either documentary evidence alone or empirical evidence alone or both.

The most obvious field of application for curriculum analysis is that of curriculum evaluation, because it can contribute to an important evaluative function - the provision of evidence to guide decision-makers. One common evaluation model involves analysis at both the first and last stages, the first involving mainly documentary evidence and the last involving empirical evidence as well.

1. Analysing existing evidence (mainly documentary)
2. Planning the collection of further evidence
3. Collecting further evidence (mainly empirical)
4. Analysing both existing and newly gathered evidence

This suggests that curriculum analysis can either be an independent evaluative activity (Stage 1 above) or form part of a larger evaluation study (Stages 1 or 4 or both). In either case the goal is to guide specific curriculum decisions, although the roles may differ as we discuss below.

An alternative possibility is to consider curriculum analysis as a research activity rather than an evaluation activity, i.e. as curriculum criticism. In this context its goal might 'to disclose meaning' (Mann, 1969) or to extend knowledge about the curriculum; and there would be no obligation to relate to specific decisions or to present a well balanced dossier. There would, however, still be a strong emphasis on results and their dissemination; and the role of the analyst would still be that of the 'expert'.

In the field of teacher education, on the other hand, the focus can be quite different. Curriculum analysis is a possible learning activity, whose success might depend only to the extent on which the participants had gained understanding, either of a particular curriculum or of curriculum problems in general. The 'process' of curriculum analysis can be educationally valuable irrespective of whether or not the 'products' i.e. completed analyses, are used or distributed. In pre-service teacher education the role of the analyst would undoubtedly be that of learner and this process aim would have priority. But in in-service education some combination of the roles of learner and expert is desirable so both process and product aims will often be emphasised. As we have argued elsewhere (Eraut, 1972b), in-service education is at its most productive when it can both meet an immediate need (i.e. evidence to guide an impending curriculum decision or information on material already in use) and contribute to the longer term professional development of teachers (i.e. improved understanding of curriculum problems).

Thus there are four fields in which we believe curriculum analysis has something worthwhile to offer — curriculum evaluation, curriculum criticism, pre-service teacher education and in-service education. All four have different aims and different characteristics. So we propose to examine possible roles and goals for curriculum analysis separately for each field of application.

Curriculum Analysis as a Component of Curriculum Evaluation

Scriven (1967) has claimed that, although evaluation can play many different roles, it has only one goal: 'to ascertain the worth of something'. Moreover he expects curriculum evaluation to involve comparison between alternatives and to lead to definite conclusions. But other authorities,

notably Cronbach (1963), Stake (1967a) Stufflebeam (1971) and Cooper (1975), have maintained that an evaluator should stop short of passing final judgement. In their view Scriven's goal is too ambitious because it assumes that conclusions can be based on agreed criteria. Different people in different contexts have different standards and different values, and these need to be respected by the evaluator. The goal of evaluation should be the provision of evidence to guide decision-makers and the evaluator should not attempt to preempt their decisions. We also subscribe to this viewpoint (cf. Eraut, 1970), and prefer to use Cooper's (1975) formulation of this approach to evaluation.

> 'Curriculum evaluation is the collection and provision of evidence on the basis of which decisions can be taken about the feasibility, effectiveness and educational value of curricula'.

Moreover we take seriously the problem of providing a basis on which decisions can be taken. The presentation of raw empirical evidence is insufficient; and lack of agreement is no excuse for ignoring value issues altogether. That is why curriculum analysis is so vital. Both documentary and empirical evidence have to be analysed and related to the standards and values of decision-makers of different persuasions, a difficult task but not one which should be avoided.

Together with Scriven (1967) we find the distinction between formative and summative evaluation helpful, as it enables us to discern three possible roles for curriculum analysis. Each serves a different audience. In formative evaluation, the audience is the development team and the purpose is to guide further development work. In the initial stage of summative evaluation its purpose is to guide the subsequent stages of the evaluation, so the audience is the evaluator himself. Whereas in the final stage of summative evaluation the audience is the decision-makers and the purpose is to guide their decisions. In all three cases we would argue that the goal should be the same - to analyse all the available evidence and relate it to different educational perspectives - but in each case the role is different*.

What, then, has the curriculum evaluation literature to offer in the way of guidance on curriculum analysis? Scriven (1967) was one of the first to recognise the problem, when he chose the term 'intrinsic

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* All three situations will be discussed in greater detail below, but meanwhile it is worth pointing out that we are using the term 'goal' to describe what the analyst is trying to achieve within the analysis itself; and the term 'role' to refer to the context and purpose of the analytic activity.

evaluation'* to describe the analysis of documentary evidence. Although he warned us that it would be 'messy' and suffer from 'lack of charm', he gave little advice on how to conduct such an evaluation. But he did make some suggestions as to what it might include. Firstly, it should include an evaluation of goals - goal analysis. Then, secondly, since 'the verbally espoused goals of a curriculum-maker are often not the implicit goals of his curriculum' the evaluator should also emphasise consistency analysis in which divergencies between (a) espoused (b) implicit and (c) tested-for goals are disclosed. Thirdly, it should include content analysis using criteria such as accuracy, coverage, significance and modernity; and finally there is a hint that it might be judged for elegance, a point we shall return to later.

Further possibilities for curriculum analysis emerge if we use Stake's (1967a) model for organizing evaluation data (Figure).

PROGRAM RATIONALE	DATA FOR THE EVALUATION OF AN EDUCATIONAL PROGRAM			
	Intents	Observations	Standards	Judgements
ANTECEDENTS				
TRANSACTIONS				
OUTCOMES				

Figure 1: Matrix for Organising Evaluation Data (Adapted from Stake 1967a)

Elsewhere (1967b) Stake has elaborated on what he considers to be the important subdivisions when one is evaluating curriculum materials. Under antecedents he includes student types, teacher types, type of school, type of community and curricular context; under transactions he includes teaching strategies, student-teacher interactions, student-student interaction, incentives and grades, and under outcomes he includes gains in student competence, changes in student attitudes, effects on staff, and institutional and community effects.

* The term intrinsic evaluation does not refer specifically to curricula. It could equally well apply to historical or literary documents. Moreover, it is normally used to refer to the analysis of documentary evidence alone, and not to the combined analysis of both documentary and empirical evidence. Hence though 'intrinsic evaluation' overlaps with 'curriculum analysis' the two terms are not synonymous. Some intrinsic evaluation activities have nothing to do with the curriculum; and some curriculum analysis activities are not intrinsic evaluation.

Stake also points out, in his more complicated version of this model, that different sources will contribute different data to each of the twelve boxes. The intents of pupils, teachers and head will not necessarily coincide with those of the author whose materials they use, nor even with each other. Teacher observations of a pupil's learning may differ from those of the pupil himself, his parents, or his examiner. Different people use different standards, sometimes because they rely on different authorities and sometimes even because they use totally different categories for processing the information. Then finally different people make different judgements when presented with the same information, partly because their standards differ and party because their goals differ.

In the context of this model an analysis based on documentary evidence alone would concentrate on three main activities:

1. Deducing what information should be included in nine of the twelve boxes, those relating to Intents, Standards and Judgements.
2. Analysing horizontal relationships, e.g. relating intended outcomes to various standards for evaluating outcomes and likely judgements about outcomes.
3. Analysing vertical relationships, in this case what Stake calls 'logical contingencies'* between antecedents, transactions and outcomes.

This requires the analyst to use his own knowledge of educational research and of the standards and judgements of different groups of educators in addition to the procedures of goal analysis, consistency analysis and content analysis advocated by Scriven. Moreover, where Scriven concentrated on consistency analysis between materials and intended outcomes, Stake raises the possibility of contingency analysis in which relationships between antecedents, transactions and outcomes are examined for their underlying assumptions.

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* The word 'contingency' is perhaps best understood in terms of 'if.... then...' statements. So saying that B is contingent on A is saying that if A happens then B will follow. In the more sophisticated framework of Stake's Model a teacher might make a contingency assumption of the form:

Given these conditions (antecedents), if I do A (transactions) then B will result (outcomes).

> 'For as long as there has been schooling, curriculum planning has rested upon faith in certain contingencies. Day to day, every teacher arranges his presentation and the learning environment in a way that - according to his logic - leads to the attainment of his instructional goals. His contingencies, in the main, are logical, intuitive, supported by a history of satisfactions and endorsements. To various degrees teachers test out these contingencies. Even the master teacher and certainly less experienced teachers need to examine the logical and empirical bases for their 'believed-in' contingencies. Do colleagues agree that their plans are logical? Have experts found such arrangements and teaching methods to 'pay off' in that way?' (Stake, 1969)

When the analysis includes empirical evidence it still consists of the same three activities, but each is modified to incorporate the additional range of evidence. Although evaluators have tended to emphasise the 'Observations' column when collecting empirical evidence it is possible to gather empirical evidence in all twelve boxes. Whether, however, it is worth allocating significant effort to data-gathering outside the area of 'Observations', is one of those difficult strategic decisions which evaluators have to make. Among other factors it may depend on the quality and reliability of the original analysis of documentary evidence. On the one hand it is desirable to avoid gathering data to 'prove the obvious', while on the other it is easy to misunderstand one's observations if one is mistaken about the Intentions of the participants or the Standards by which they judge the outcomes.

The analysis of the horizontal relationships is significantly changed by the introduction of what Stake has called Congruency Analysis, which is concerned with investigating the congruency between Intents and Observations and the disclosure of any significant mismatch*. But this should not lead to the neglect of the other horizontal relationships, the links with standards and judgements, which are often much more difficult to analyse. Stake also distinguishes between the analysis of vertical relationships in the Intents column and that in the Observations column, claiming that the former is primarily concerned with 'logical contingencies' and the latter with 'empirical contingencies'. But here we would disagree.

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* The term 'Congruency Analysis' is here used to refer to the comparison of Intents with Observations and therefore involves empirical evidence. Scriven's term 'Consistency Analysis', on the other hand, is an intrinsic evaluation activity which does not involve empirical evidence.

The distinction between logical and empirical contingencies is useful, but both are involved in both columns. The analysis of contingencies among Intents can legitimately refer to empirical research; and the analysis of contingencies among Observations is unlikely to lead to significant conclusions about empirical contingencies. Evaluation is decision-oriented rather than conclusion-oriented inquiry (cf. Cronbach and Suppes, 1969); and evaluation studies have to cope with far too many variables for empirical evidence to be conclusive on its own. However, some convincing interpretations can be offered by combining empirical evidence with logical argument and relating it to commonly held contingency assumptions. These are never likely to be empirically proved, but when the goal is guiding decision-making, any information which decreases the element of pure chance is potentially useful, even if it is not statistically significant.

How important, then, is the curriculum analysis component of an evaluation study? What proportion of the resources available for evaluation activities should be directed to analysis rather than data collection? As we have suggested elsewhere (Eraut, 1972a), three factors have to be taken into account in distributing resources between 'competing' evaluation activities:

1. The scale on which each activity is planned
2. The degree of rigour with which it is pursued (which is presumably related to the manpower costs); and
3. The anticipated value of the evidence gained for guiding decision-making.

So let us now return to the three roles for curriculum analysis outlined earlier - those in formative evaluation, and in the initial and final stages of summative evaluation - and discuss their significance in terms of these three factors, and in the light of our more detailed discussion of the methodology of curriculum analysis.

Two tasks have been described for evaluators in the early stages of curriculum development projects: the clarification of objectives and preparation of instruments to measure their achievement (Harlen, 1975), which relates primarily to the collection of empirical evidence; and the independent criticism of draft proposals and embryonic ideas (Tawney, 1975), which relates more closely to curriculum analysis. They appear distinct but can in practice overlap. Independent criticism is bound to touch on

intended outcomes, whether or not the language of 'objectives' is being used; and the preparation of test instruments is bound to involve at least some curriculum analysis. But at the beginning of a project, these activities can only be undertaken at an informal personal level, by an evaluator or by a consultant who has close and regular contact with the development team. There is as yet little documentary evidence on which to base a formal curriculum analysis. However, as the project begins to produce documents and to conduct trials, there comes a stage when there is sufficient documentary evidence to warrant a formal analysis. The audience would be the development team and its consultancy committee, and the analyst could be either the evaluator or an independent agent. The purpose would be the disclosure of major assumptions about feasibility, desirability and educational value and their relationship to the standards and values of various groups of educators; and it would involve goal analysis, consistency analysis, and contingency analysis. Content analysis can also be important, though it may well be undertaken by a subject expert independently of the main analysis. Although in practice it is not unknown for documents to be sent out for comment, it is rare for this form of analysis to be conducted at more than a superficial level (cf. however Eraut, 1972a). So there is little evidence on which to base a cost-benefit analysis of curriculum analysis in formative evaluation. We suspect, however, that the natural reluctance of projects to be evaluated and the lack of an accepted methodology for curriculum analysis have been more important causes of its neglect than a strong conviction that an independent analysis involving two or three weeks work would not yield sufficient pay-off.

The second role is in the initial stage of summative evaluation, when the audience is the evaluator. According to his degree of independence it may or may not be appropriate for the analyst to carry out the analysis himself. In this role the analysis is essentially hypothesis-forming and its purpose is to guide any subsequent empirical investigation.

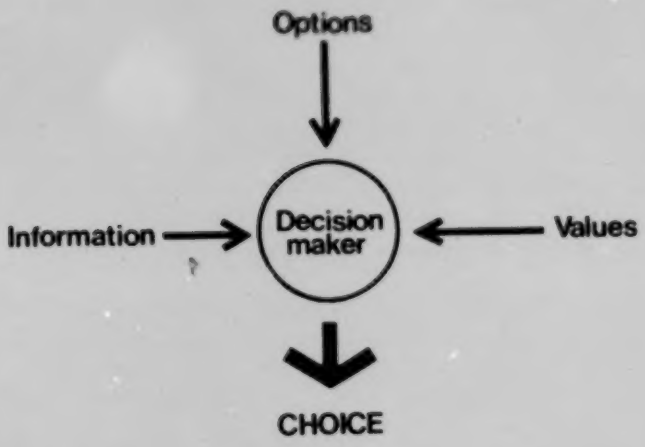
00022

An independent analyst with a good knowledge of schools will be able to predict the likely treatment of the materials and hence suggest variables to which the evaluator might profitably attend. He might also be able to anticipate possible incongruencies between the intended antecedents, transactions and outcomes, and those which are actually observed. Then finally, by reference to standards, he can suggest which kinds of evaluative information are most likely to be wanted by various possible user groups. Without such an analysis, it can be argued, the evaluator's data-gathering efforts could conceivably be misdirected. Moreover, the effort required is likely to be very small in comparison with the resources involved on most data-gathering activities. The planning of an empirical evaluation always involves difficult resource-allocation decisions, and a prior curriculum analysis can help to identify the areas where information is most needed. West's (1974) evaluation of the Nuffield 'O' Level Chemistry Curriculum Project is an excellent example of the use of curriculum analysis to guide subsequent data-collecting activities; and he has subsequently generalised this experience (West, 1975) to suggest a three-pronged approach to summative evaluation with curriculum analysis as a major component.

The third role of curriculum analysis is in the final stage of summative evaluation, where its purpose is to combine both documentary and empirical evidence into a final report which seeks to brief all those who may participate in decisions about the adoption or implementation of the project's proposals. Traditionally the evaluator has concentrated on summarising the empirical evidence he has collected rather than on the kind of curriculum analysis we have been proposing. But if one accepts the goal of providing guidance for decision-makers this narrow view of his reporting responsibilities cannot easily be justified. The decision-maker who operates rationally according to Stufflebeam's (1971) model (Figure 2) may be essentially an 'ideal type', but nevertheless he is the customer. Without him evaluation can only be regarded as a costly waste of time.

00023

Figure 2: Decision-Making Model (Adapted from Stufflebeam, 1971)



The 'rational consumer' will not only want to know about effects, but also about the assumptions, values and arguments which support the project's curriculum strategy; and where the project stands on each of the issues which he, the consumer, considers important. He will wish to be informed of the main arguments that might be raised against the project and how far the project might seek to answer them, and of the significant differences between the project's strategy and alternative strategies. As Scriven (1967) argues:

> 'when we come to evaluate the curriculum, as opposed to merely describing its performance, then we inevitably confront the question of its superiority or inferiority to the competition'.

Direct empirical comparison of effects is virtually never possible; so decisions have to be based either on differences in goals or on differences in contingency assumptions as illuminated by empirical evidence. In both

00024

cases, a proper curriculum analysis is vital.

This raises a further issue, that of the 'independence' of the evaluator or, as some would prefer to describe it, his 'political role' (cf. Macdonald 1975). To some extent the dangers of propaganda can be avoided if the evaluator sees his role as focussing evidence on decision issues, and providing a backcloth of possible options against which the project can be judged. But nobody can be totally independent or even expect to perceive all the issues. Will our rational consumer not be better served if there is more than one analysis? Should not other people besides the evaluator undertake analyses of the same evidence? Should not all the analyses be subjected to public debate? It probably isn't necessary to go to the extreme of a formal 'mock-trial' with defending and prosecuting counsel (cf. C.S.E., 1973); but the commissioning of additional analyses by the sponsoring agency would not seem unreasonable.

Finally we have to consider the situation where there are no resources for empirical work (or when it is still incomplete). An analysis could then be the only practicable form of summative evaluation; and, even if done on a small scale by a group of potential use adopters, it could still offer good value for money. Where curriculum materials are involved it is not just their cost which is involved; for curriculum decisions affect the use to which all the school's resources are put. The decision to use a particular set of materials or adopt the proposals of a particular project may be only the visible tip of an iceberg of implicit curriculum decisions; and the analyst should always seek to increase awareness of this wider decision-making context. Alternatively, these could be mere 'token adoption' and no real change at all, another situation which the analyst should seek to prevent by trying to ensure that implications for implementation are properly understood.

The sceptics among us will dismiss all this discussion about evaluation as irrelevant, on the grounds that no decision-maker ever reads an evaluation report anyway; and that this would still be the case if reports were made more readable. Few users spend much time on the process of decision-making and the Stufflebeam Model (Figure 2) is an ideal which is unlikely to be adopted. But does this alter the responsibility of the educational community as a whole for the often perfunctory nature of curriculum decision-making in schools? After all we seem prepared to commit a much larger proportion of our resources to the selection and

classification decisions involved in examining. Although there are more sinister explanations for this allocation of priorities, it could just be because curriculum decisions are so easily rushed or even avoided (Eraut, 1970). Or is it that people feel more accountable for norm-referenced decisions than for criterion-referenced decisions? Both these attitudes are at least susceptible to change, and it could be argued that it was our duty to attempt just this.

At a recent conference (SSEC, 1973) Scriven declared that it was time we developed a normative model of dissemination. Years of empirical study of the dissemination process have shown how haphazard it usually is, and how few of the original intentions of an innovator ever survive; but there is little guidance on what we might do to improve it. Scriven suggested that a normative model could be based on the concept of the rational consumer who makes decisions in his own interests and according to his own values, taking into account the pressures and constraints to which he is subjected and using as much relevant evidence as possible. Essentially he is someone who operates according to the Stufflebeam Model (Figure 2). Scriven then went on to define the rational producer as someone who serves the rational consumer. The most notable feature of this model is that the rational producer is not seen as working primarily in his own interests but in the interests of the rational consumers. So a rational producer cannot even exist until there are rational consumers for him to serve. Even if this argument does not immediately lead us to the extreme policy conclusion that all production activity should cease until we have more rational consumers, it certainly casts doubts on the present allocation of resources between production and 'consumer education'.

In the context of this normative model of dissemination, curriculum analysis has two important roles: as a form of communication between rational producers and rational consumers; and as a method for training rational consumers. The first is essentially the role we have just been discussing: serving the potential user by analysing documentary and empirical evidence and relating it to standards. The second is one of the roles of curriculum analysis in pre-service and in-service education which we will be discussing later.

Curriculum Criticism

If curriculum evaluation is defined in terms of 'decision-oriented' inquiry (cf. Cronbach and Suppes, 1969) then we have to recognise that it is possible to analyse curricula for other purpose. Such an analysis is unlikely to be 'conclusion-oriented' in the sense that empirically based research is conclusion-oriented, but it nevertheless conforms to Cronbach and Suppes (1969) definition of disciplined enquiry.

> 'Disciplined inquiry has a quality that distinguishes it from other sources of opinion and belief. The disciplined inquiry is conducted and reported in such a way that the argument can be painstakingly examined'.

We prefer to use the term 'curriculum criticism' to describe a curriculum analysis which is not specifically decision-oriented; and see the main purpose of such criticism as the disclosure of meaning and the extension of knowledge about the curriculum. The critic, unlike the evaluator, is free to choose his own standards and values and to focus on particular issues rather than attempt to cover a wide range. Moreover, it is he, together with other educational researchers, who should provide the basic knowledge on which the evaluator can draw. The evaluator is essentially a technologist and his service role depends on the state of educational knowledge.

When, in the course of our project, we attempted to analyse various kinds of curriculum materials we often felt that we were mapping out new territory; and this was a constant source of surprise to us. Analysing materials is an obvious and convenient form of educational enquiry; and we expected to find considerable support in the literature. However, whenever we looked for guidance, whether it was to philosophy, psychology, to curriculum theory, to sociology, or even to practical books on the methodology of particular subjects, we seemed to find a large gap between what was written and what was needed for our analysis. We found plenty of theorising about what ought to be done and plenty of practical advice on what to do: but there were no links between the two and there was little or no critical examination of the assumptions underlying practice. We had to conclude that, with a few notable exceptions, publications that might be appropriately labelled 'curriculum criticism' do not exist. What would the field of literature be like if it was confined to the history of literature, the psychology of literature, the sociology of literature, aesthetic theory, audience research and 'Teach

yourself to write' courses, without any textual criticism for these activities to feed on? No wonder Schwab (1969) said that the field of curriculum was moribund!

Mann (1969) pursues this literary analogy still further when he argues that the curriculum should not only be looked upon as Technology, i.e. in terms of means and ends, but also as Art.

> 'Surely a curriculum, which cannot be Art, can be artful in some degree, and can be considered not only in terms of how it conditions and is conditioned by man, but also in terms of how it answers man's listening and seeking.'

'As with the literary critique', he continues, 'the function of the curricular critique is to disclose its meanings, to illuminate its answers'. Moreover, as with literature, 'the refinement and application of formal procedures of measurement, analysis and interpretation without any messy turning inward' is inadequate.

> 'Critical discoveries in education, as in the physical sciences, depend, along with good formal procedure, upon the critic's ability to draw upon knowledge that is uniquely his and is not part of any formal discipline, and to use that knowledge in a disciplined and imaginative way. While the phrase 'turning inward' may be guilty, by association, of confusion, the sort of use suggested here of intuitively held unformalized knowledge is not messy, nor can formal knowledge progress unless it is considered. New understanding of what is involved in curriculum will come from those scholars who can make the heuristic leap from the data they must know well to the ethical roots of their concern.'

If, as our work in curriculum analysis has led us to believe, many decisions in the field of curriculum are based on intuitively held unformalised knowledge, then the importance of curriculum criticism is hard to deny. It is needed both to illuminate existing knowledge and as a springboard for the heuristic leaps of the future.

Mann's second main argument for curriculum criticism is based on the assertion that:

> 'Education is properly concerned with the ethical aspects of its product; that exceedingly little is known and is likely to be known (people being as complex as they are) about controlling this aspect of education's product; that the very best the educator can do, therefore, is to rely on the general tendency for good to produce good, and pay very careful attention to the ethical qualities of the process of education.'

Then thirdly, Mann argues that 'the world the educator creates through the curriculum is a world inhabited by actual children as well as by potential adults'. 'The curriculum is to be thought of not only as producing but also as meaning and as lived-in'. This suggests the

00028

metaphor of a curriculum as a building*. It is designed for a specific purpose, but needs subsequent furnishing; and it has many effects on its users which are quite unrelated to its purpose. User research will no doubt make architects wiser but it will not necessarily make them better. The architect is both technologist** and artist; and architectural criticism is concerned with both functional criticism and aesthetic criticism. In curriculum analysis we have hitherto concentrated on the former though the boundary is impossible to draw. But the need for both forms of criticism has become increasingly apparent to us. The 'decision-makers brief' can be extraordinarily useful, but it has little life; and education, after all, is for living people.

Curriculum Analysis in Pre-Service Education

One of the main problems in suggesting possible roles for curriculum analysis in teacher training courses is its location within the course structure. A content analysis approach might be most appropriately located in the main subject course, where it could be used to correct common errors; to provoke discussion about oversimplification or biased treatment of controversy; or as a means of elucidating linkages between different areas of the subject as part of a search for basic principles and unifying ideas. A comparative analysis of the relative merits and demerits of rival materials might be a valuable part of a professional course and could be directed at a number of goals: more intelligent use of materials on teaching practice or as a serving teacher; greater awareness of alternative approaches to the curriculum area concerned; and/or improved ability to select curriculum materials, and to read and understand analyses, should they become more generally available. Consistency analysis and goal analysis might be an important part of a philosophy course. Contingency analysis might well form the basis of a psychology course. A search for implicit values and assumptions in the textbooks of the past and present could well bring additional relevance to a history or sociology course; and a sociology of knowledge course would have a field-day.

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* Surprisingly, the obvious link with Jenkins (1972) extremely fruitful metaphor of the curriculum as landscape only came to us subsequently.

** Considerations of elegance, impact and affective response, for example, are both functional and aesthetic.

In all these cases, however, one would be fragmenting not only the study of the whole curriculum but also the study of the part-curriculum; and treating the critical issues in isolation from one another. Whereas even a part-curriculum is the result of a unique synthesis of decisions and assumptions whose interrelations are crucial to its understanding.

The alternative approach is to create a separate course in curriculum studies which seeks to avoid this fragmentation. But this too has its problems, especially a marked tendency either to degenerate to superficiality or else to 'elevate' to meaningless metatheory. In our view this results from it being cut off from the kinds of curriculum criticism which might have been included in main subject, professional or education courses. In order to realise its potential, curriculum study has to have an integrative rather than an isolated role in the teacher education curriculum. What integrative roles are possible for curriculum analysis in the context of pre-service education? So far we have thought of three, and they are not mutually exclusive.

Firstly it could serve a question-raising function. This could be especially valuable near the beginning of a course, perhaps immediately after a period of observation or teaching practice. It can certainly fulfil this role in in-service education, and we believe that with careful handling it could also do so in pre-service education. The purpose would be to identify assumptions about subject matter, contingencies and goals, which would subsequently be discussed in main subject and education courses. It could provide a practical base on which some of these courses could be built, thus adding a new dimension of relevance and commitment to the more theoretical aspects of a student's work.

In an exactly complementary fashion curriculum analysis could serve a unifying function towards the end of a course. If the earlier courses had dealt with the main forms of analysis, it could then concentrate on integrating the previous work and relating it to practical decision-making. To be successful, much more coordination of the curriculum would be needed than is commonly found at present; and it might need to be built into the assessment pattern if it was to be taken seriously at a late stage in the course. This could cause problems because we have found it an advantage to treat curriculum analysis as a small-group activity, and to use the resultant analyses as a basis for inter-group discussions.

In both these roles curriculum analysis has been an integrative focus in an essentially multidisciplinary approach to curriculum study; whereas in its third, and possibly most attractive, role it is a longer interdisciplinary course which, by use of team teaching, combines all the separate analytic approaches discussed above. This would certainly avoid superficiality, but would not necessarily avoid metatheory. The remedy in our view is to concentrate on curriculum criticism and to include its aesthetic as well as its functional aspects. Curriculum criticism is a much more appropriate activity at this stage than curriculum development*, because uncritical approaches to the latter lead to superficiality and a failure to appreciate the potentially controversial nature of so many of the curriculum decisions which are commonly taken for granted.

Curriculum Analysis and In-Service Education

Most of our experience in using curriculum analysis has been with teachers in service, either on long award-bearing courses or at short one-week workshops. Indeed it was through teaching the Sussex M.A. Course in Curriculum Development and Educational Technology that our interest in curriculum analysis first began. A major function of this course is to prepare people for work in curriculum development, usually in the local rather than the national context. Naturally we wanted to emphasise the practical nature of the task and to include curriculum development work as an important part of the course. But we found that using curriculum development as a vehicle for curriculum study had disadvantages as well as advantages. There is an innate tension in curriculum development, or indeed any other form of creative work, between the analytic and the heuristic approaches; and using it as a vehicle for curriculum study tends to bias it towards the analytic. (There is perhaps a parallel here with Mann's distinction (1969) between the curriculum as technology and the curriculum as art: certainly no novelist would attempt to write a critique of his own novel, subsequently let alone simultaneously.) This problem led us to introduce curriculum analysis as the main vehicle for curriculum study and as a major focus for the first term's work, so it could prepare the ground for curriculum development in the second and third terms.

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* Curriculum development is here being used to imply making major curriculum decisions. It does not include preparing materials within an already defined curriculum strategy, which relates to a different goal altogether.

00031

One pattern we have evolved has much in common with some of our suggestions for pre-service education. We begin with a one week workshop* in which groups of students analyse materials specifically chosen for their significance and issue-raising potential (this year it was three Schools Council projects, Environmental Studies 5 - 13, Keele Integrated Humanities and SCISP). This is followed by a series of interdisciplinary seminars during the term and concludes with each students producing an individual analysis for assessment. Throughout the course our goal in using curriculum analysis is more than just the preparation of future analysts or the improvement of the selection of curriculum materials. It is to open up the whole field of curriculum criticism, to link curriculum theory with curriculum practice and, above all to link educational theory with education practice, rather in the way we described above for pre-service education.

Now, however, we are experimenting with a new pattern in which an initial two-week workshop on the analysis of materials leads on to an exploration of a part-curriculum in action. One seminar concentrates on curriculum issues in general while another seeks to provide methodological support for a brief empirical study. Two weeks are set aside for fieldwork, and the final analysis for assessment is expected to include both documentary and empirical evidence. There will be no attempt to engage in any formal measurement, and the empirical work will concentrate on observations and interviews. The purpose is to avoid an undue concentration on curriculum materials, to acquire a feel for non-quantitative empirical work and to encounter some of the problems of combining documentary with empirical evidence.

All these goals are still relevant to shorter in-service courses, but more immediate needs are also very pressing and time is usually in short supply. We have found 1 week workshops on the analysis of curriculum materials particularly useful, and describe them in some detail in Chapter 5. In our experience it takes at least two weeks to produce an analysis for circulation, but 1 week is sufficient time

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* This also has an important social and psychological function at the beginning of the course, and is conducted along the lines described in Chapter 5.

for people to get used to the idea of curriculum analysis and to make a relatively penetrating appraisal of some materials*. Product-oriented goals are not necessarily as important as process-oriented goals, and significant progress can be made on the latter within a single week. Four possible short-term process goals for curriculum analysis workshops are discussed below. On the whole they are mutually supporting rather than exclusive.

1. To improve the implementation of new curriculum materials
   Here it is assumed that the decision to adopt new materials has already been taken; and that workshop participants will want to understand the rationale, curriculum strategy and implications for implementation. A typical case might be where several schools, who were about to use certain newly published materials, each sent a representative to a workshop. Not all the groups at the workshop would need to be analysing the same materials; and it could be especially fruitful if groups were examining competing or closely related materials. If there was an agreed need for supplementary materials the schools might be able to tackle the task cooperatively on the basis of the mutual understanding achieved by a week of working together.

2. To improving existing curricula
   Here the aim is to arrive at a better understanding of materials already in use and to review existing practice. This could be particularly valuable if groups could be composed of teachers who used the same materials in different ways. The analysis could result in a decision to 'improve' the material by adaptation or supplementation as well as in improved implementation through better understanding.

3. To guide the selection of curriculum materials
   Here it is assumed that the workshop participants are involved in the decision-making process; and the purpose of their acquiring skills in curriculum analysis is to enable them to make decisions which are more rational, better informed and more likely to take into account a full range of relevant criteria. It is hoped that this experience

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* It usually takes them about 3 days to get properly 'dug in' and it is vitally important that they have at least read the materials before the workshop.

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will prevent the hasty adoption of new materials on the basis of a 'fixation' on a single well-published feature or an inadequate examination of its underlying rationale or practical implications. The clarification of criteria, arguments and judgements should also make it easier to democratise the decision-making process. Some participants might have specific materials in mind, others might just be scouting around. There is also the possibility that different groups might analyse rival materials on a comparative basis.

4. As a preliminary to curriculum development
This role for curriculum analysis has already been discussed in the context of advanced courses but takes a rather different form when we are considering cooperative school-based or teachers centre-based curriculum development. The dominant concern is not so much with the possibility of using the materials as it is with learning from the materials. Even when the materials themselves are unlikely to prove acceptable it is possible that some of the approaches used will be relevant to the curriculum problem being tackled. Sub-groups might analyse materials specifically selected for their variety of approach; and the group as a whole might use the experience as a practical way of learning to communicate and work with each other, as well as for formulating its own initial approach to the curriculum area concerned.

Our experience has suggested that workshops can be remarkably successful in achieving the first three of these short-term goals. We have not tried the fourth though it seems a promising possibility. But we would also hope that we made some progress towards longer-term goals, such as deepening the understanding of curriculum problems and forging links between educational practice and educational theory. To these goals, which have already been discussed, we would now like to add a third: the encouragement and facilitation of self-evaluation. For it is in this direction, we believe, that our decision to concentrate the workshops on the analysis of materials has had beneficial side-effects. It is very threatening to review one's curriculum or one's teaching, but much less so to review the materials one uses; because they have usually

been produced by someone else. Yet through the analysis of materials it is possible to raise a large number of questions about the curriculum in general and one's own teaching in particular. We have often noticed a remarkable tendency towards self-evaluation during the course of our workshops; and it could be argued that this was the most important goal of all.

CHAPTER 3: A REVIEW OF PUBLISHED SCHEMES FOR THE ANALYSIS OF CURRICULUM MATERIALS

Whereas Chapter 2 explored possible roles and goals for curriculum analysis in four main fields of application (curriculum evaluation, curriculum criticism, pre-service teacher education and in-service education) this chapter concentrates on a single role - provision of guidance to potential purchasers and users of curriculum materials - and a single goal - evaluation of the materials against a range of criteria. Though much of our work is relevant also to other goals and roles, its primary purpose has been to develop and explore schemes and techniques for the analysis of curriculum materials in order to support and improve curriculum decision-making.

Our initial proposal to develop and test a range of analytic techniques within the broad framework of a general scheme was explained in Chapter 1. So this chapter serves two further functions: it provides a comparative and critical survey of seven published schemes for the analysis of curriculum materials; and it sets out the rationale for the particular approach we have developed at Sussex. The main schemes compared are reproduced at the end of the chapter and come from the following sources:

1. Social Sciences Education Consortium, University of Colorado, Boulder, U.S.A. (Stevens and Morrissett, 1968) - SSEC Scheme.
2. Far West Laboratory for Educational Research and Development, Berkeley, California, U.S.A. (Hutchins, 1970) - Berkeley Scheme
3. Maurice J. Eash, University of Illinois, Chicago, U.S.A. (1972)
4. Educational Resource Centre, St. Gallen Canton, Switzerland (Hengartner and Weinrebe, 1972) - St. Gallen Scheme
5. Peter Häussler and June Pittman, Institut für die Pädagogik der Naturwissenschaften, University of Kiel, Germany (1973)
6. National Board of Education, Stockholm, Sweden (Nyström, 1974) - Swedish Scheme.
7. Centre for Educational Technology, University of Sussex, Brighton, U.K. (Chapter 4 of this handbook) - Sussex Scheme.

All these schemes fit our definition of a curriculum analysis scheme as "an organised set of questions and/or techniques designed for general application to given types of curriculum materials with the aim of

00036

elucidating and evaluating their most important characteristics". Important work by Frey (1969) on Lehrplan Analysis (syllabus analysis), Tyler and Klein (1971) on Standards for Curriculum Materials and the American Institutes for Research (1971-2) on Curriculum Project Case Histories has been referred to when relevant, but is not specifically included in the comparison because it has not resulted in a scheme for analysing materials.

Since many of the schemes were designed for different purposes it is useful to distinguish three possible functions for an analysis:

1. A Descriptive - Analytic Function in which the materials are described and analysed according to some curriculum model, either the analyst's or the author's. The purpose is not only to describe the material but also to elucidate its rationale and its structure.
2. An Evaluative Function in which the materials are judged against a range of criteria.
3. A Decision Making Function in which the purpose is to provide a 'brief' for those responsible for making decisions about the materials. These may be either selection decisions or implementation decisions.

The distinction between the last two functions is that the Evaluative Function is to provide information of general interest and relevance to a variety of possible contexts, whereas the Decision-Making Function is to assist people to make definite decisions in a specific context. Some analytic activities are difficult to allocate to a particular function: the search for implicit values, for example, could be regarded both as descriptive-analytic and as evaluative. But we shall maintain the distinction, as it enables us to compare analysis schemes without losing sight of the different purposes for which they were designed.

Approaches to the Descriptive - Analytic Function

All the schemes under review include a descriptive element, but in two it is very limited indeed: the Swedish Scheme has a short checklist of about 12 items in addition to the usual publisher's information; and Eash includes a partly descriptive section on objectives as well as three 'brief' descriptive summaries:

IIF Briefly outline the scope and sequence
IIID In a brief statement describe the recommended methodology
IVE Briefly state what evaluation procedures are included. If possible give examples.

00037

Both these schemes are primarily concerned with the evaluation function; whereas the two earliest schemes to be published, the SSEC Scheme and the Berkeley Scheme, were both concerned almost entirely with the descriptive - analytic function. The SSEC Scheme was originally designed for providing analyses for the consortium's information bank, but soon began to be used for in-service training as well. This demonstrated that it could be used by teachers other than those employed by the consortium. This would probably also be true for the Berkeley Scheme if the audio-visual component was omitted; although the scheme has hitherto been used only by the laboratory's own staff. Both schemes can be applied to all subject areas and age groups in spite of the fact that the SSEC Scheme was based on Secondary Social Science and the Berkeley Scheme on Elementary Science Curricula. There the resemblance ends. The Berkeley Scheme is less theoretically oriented and much more concerned with presenting the materials in simple language in the author's own terms. Though the lengthy quotations from the author which characterised the 1968 versions (Far West Lab. 1968) have been omitted from the 1970 version, the questions do not presuppose any particular curriculum model. The SSEC Scheme on the other hand is deliberately based on the Tyler-Bloom model and is more concerned with bringing out theoretical interpretations of the author's decisions. Those parts of the two schemes which relate to Rationale, Objectives, Content and Teaching-Learning Strategy are given below:

S.S.E.C. (1968 version)

Rationale and Objectives

Rationale
General Objectives
Specific Objectives
Behavioural Objectives

Content

Cognitive Structure
Affective Content

Instructional Theory and Teaching Strategies

Author's orientation
Elements of instructional theory and their use in teaching.
Strategies
Teaching forms, or modes or transactions.
Use of teaching forms.

Berkeley (1970 version)

Goals and Objectives

What is the rationale for the curriculum development?
What are the goals?

Content

What is to be learned?
What relationship is there to other fields of learning?
How are the content and materials organised?

Classroom Strategy and Activities

What is the pattern of activities in a lesson?
What is the teacher's role?
What teacher preparation is required?
What do the students do?
How are the students tested and evaluated?

00038

The SSEC Scheme includes supplementary questions under each subheading but the Berkeley Scheme does not, possibly because further guidance was unnecessary within the scheme itself when only their own staff were required to use it. In this respect the Berkeley Scheme resembles that used by the American Institutes for Research in the 'product description' sections of their case histories of development projects (see Appendix A). These 'product development studies' were also written by their own research staff, and the questions are at a similar level of detail. But our experience at Sussex with various versions of the SSEC Scheme has shown that supplementary questions are essential, unless the analyst has had substantial training; and even then they are desirable.

A further point of controversy is the use of quantitative information. Both the schemes above are purely qualitative and the only figures demanded are those relating to cost or to time required. One useful form of quantitative analysis was developed by Easley (1967), also working with elementary science materials. He prepared four profiles relating to student task, method of presentation, knowledge mode and image of science. Each profile is based on a list of descriptors and a count of the number of 'assignable units' associated with each descriptor. We have found this technique and variations of it extremely useful at Sussex and not at all demanding on the theoretical knowledge of the analyst. (An example is shown in Appendix B). The close attention to detail required also forces the analyst into a much greater familiarity with the material than he tends to acquire when pursuing a purely qualitative scheme. But the technique is time consuming and needs to be used sparingly. Moreover, while some features such as balance of emphasis are highlighted by approximate quantitative methods, others such as quality and style are merely obscured. At Sussex, therefore, we have kept the scheme itself qualitative; but given additional advice to the analyst on how to supplement it with carefully selected semi-quantitative tables and profiles (cf. Chapter 4).

Recent work by Hutchins (1971) at Berkeley and by Häussler and Pittman (1973) at Kiel has aimed at producing easily codable information for use in punched-card or computerised information systems. Both these systems are primarily designed for locating materials; and the Häussler-Pittman Scheme even goes down to the lesson unit level, where its extensive list of key content words (c.f. Appendix C) could be very useful to curriculum developers in tracking down ideas about experiments, applications and forms of presentation. But the machine-codable format, which enhances their value

06039

for locating materials, reduces their value as analysis instruments. The conflict between these two functions is well-illustrated by the Häussler-Pittman Scheme: its initial framework of questions (reproduced as Scheme 5) is extremely interesting; but its attempts to elaborate them in machine-codable form (cf. Appendix D) are inevitably disappointing. Häussler and Pittman were able to get fairly consistent results for the analysis of lesson units at this mainly descriptive level; but were less successful at the level of the part-curriculum. Nor did they attempt to capitalise on their lesson unit analyses by combining the data on individual units into profiles which might show the balance of the materials as a whole.

Another problem is the extent to which it is considered desirable to rely on the author's own views. The Berkeley Scheme remains very close to them in its section on rationale and goals and avoids the need for them elsewhere by keeping the description at a purely factual level. The SSEC Scheme is also author-oriented in that many of its sections start with questions about the author's views (cf. sections 2.1, 4.1, 4.2 and 5.1); but, by asking such a wide range of theoretical questions, it often necessitates a reply such as:

> Theories of sequencing of learning. The author does not explicitly state that his material is based on any specific theory of learning. However, the materials reflect an understanding of developmental stages. The activities start with experiences of children and move toward abstract concepts.

We shall return to this issue when we come to consider the evaluation function, but meanwhile it is worth noting that author-orientation is only feasible for the products of large-scale curriculum projects or for textbooks accompanied by extensive teacher manuals. The kind of textbook in which the only evidence of the author's rationale and strategy is a 1-page preface has not been analysed by either scheme; and in such a situation the use of the SSEC Scheme with its reliance on the author's statements become distinctly speculative.

Textbooks are still the dominant form of curriculum material in all countries except possibly the U.S.; and the problem of analysing them highlights the distinction between an analysis of curriculum materials and an analysis of the part-curriculum to which they contribute. Whereas curriculum projects and the more sophisticated American publishers tend to

produce elaborate teachers' manuals which effectively pre-determine all possible characteristics of the part-curriculum (or at least the author's intentions about them), with textbooks the exact nature of the curriculum in action can be very uncertain. The materials themselves may pre-empt only a few of the necessary curriculum decisions and the author's intentions for the rest may be not at all clear. The solution to this problem adopted at Sussex has been to develop a separate section on Materials in Use to come after the Description and Analysis of the Materials. This allows us to note which decisions would be pre-empted by the adoption decision and which would still be left open; what modifications and additions are possible within the terms of the overall curriculum strategy; and how the materials would probably be used in various contexts.

Part 3. The Materials in Use (Sussex Scheme)

3.1 Main Features

Summarise the main features of the materials and the recommended pattern of use, indicating which curriculum decisions would be pre-empted by the decision to adopt the materials and which would still be the responsibility of the user group.

3.2 Possible Modifications and Additions

Describe ways in which the materials or the recommended patterns of use may be modified or supplemented when implementing a curriculum based on them. Indicate where there is no scope for alteration within the terms of the overall curriculum strategy, and note how much further curriculum planning is likely to be necessary.

3.3 Patterns of Use

Describe some possible patterns of use in the context of the overall school curriculum. Which pupils are involved and when? How does it relate to areas of the curriculum which come before it and after it? What, if any, modifications and additions are to be incorporated? What, if any, form of assessment is intended?

3.4 Implications for Implementation

8 subsections (for details see Chapter 4)

Though four of the other schemes (SSEC, Berkeley, St. Gallen and Häussler-Pittman) cover implementation problems, none of them mention adaptation, alternative patterns of use, or the need for further curriculum decisions. Only Hengartner and Weinrebe (St. Gallen) seem to have thought seriously about the respective roles of textbook and classroom teacher; and they suggest that textbooks provide one or more of the following

00041

(a) a collection of games and exercises;
(b) a rationale, and advice on the planning and organisation of teaching;
(c) guidance for the learning process in the classroom; and
(d) information for the teacher and pupil.

Their own scheme was designed for modern mathematics textbooks in the elementary school, and concentrated on functions (a), (b) and (d); because they considered all three of these functions to be essential for supporting teachers in an innovative area of the curriculum. They did not, however, expect textbooks to have more than a limited influence on the guidance of the learning process in the classroom; and even built some protection against "teacher-proof curricula" into their scheme with the question:

'Where is the material described and is it recognised as a hypothesis?'

But this recognition of the limitations of textbooks is accompanied by a special concern for the nature and quality of the support offered to teachers; and this is a particularly valuable feature of the St. Gallen Scheme. Unlike many other schemes, they avoid the danger of analysing a teachers' manual for information about the curriculum without also considering it as a piece of communication in its own right, whose content and style might not always be appropriate for its intended audience.

Most of the schemes head their major sections with titles like Content, Aims, Objectives, Methods, and Evaluation which approximately correspond to the elements of the descriptive curriculum models proposed by Kerr (1968) (Objectives, Knowledge, School Learning Experiences and Evaluation), Schulz (1970) (Intentions, Themes, Experiences and Media), and a number of other writers (Giles, 1942) (Taylor, 1967) (Nicholls, 1972). Only the Swedish Scheme, whose descriptive section is very short, and the Sussex Scheme have departed from this relatively non-controversial practice. But the SSEC, Eash and Häussler-Pittman Schemes have gone beyond it to endorse a prescriptive curriculum model, the curriculum model based on behavioural objectives which was first advocated by Tyler (1949).
One difficulty in this approach is that, according to Bloom (1971), statements of objectives subsume statements about content, since an objective has both a content and a behavioural component. But at the same time such statements are unable to convey much information about the structuring or organisation of the content. So the SSEC Scheme adds an additional section on content,

which in our experience often causes repetition; and analysts are confused as to what to include under 'objectives' and what under 'content'. The risk of overlap is much less in Eash's second part on 'organisation of the materials', but his lack of concern for subject matter and emphasis on 'task analysis' puts him even further in the behaviourist camp. While this may well be a feasible approach to curriculum development, it is surely not appropriate for a general curriculum analysis scheme. For many authors work in a totally different manner, and not always without success. A further difficulty, noted by Häussler and Pittman (1973) is that:

> 'because of the lack of formally stated behavioural objectives in most curricula, the behaviours analysed in the Curriculum Materials Analysis Scheme must be inferred as "intended" by the developers as expressed in their written material'.

At Sussex we have tried to avoid both these difficulties by deferring the issue of objectives until we consider the Materials in Use. The descriptive sections on pupil and teacher materials are confined to factual questions about content, presentation, pupil tasks, assessment etc. and include two sub-sections on aims and objectives:

> 2.1.5 List, summarise or describe any statements of purpose, aim or objectives included in the pupil material.
>
> 2.2.5 List, summarise or describe any statements of purpose, aim or objectives that are included in the teacher's material; and indicate whether they refer to learning by (a) the pupil or (b) the teacher.

Then, in section 2.3 on the Structure of the Materials, the questions become more analytic. But, although we have asked the analyst to assemble all the relevant evidence, we have not required him to take the additional step of inferring 'the objectives of the materials'. We believe that this would be forcing him beyond the bounds of reasonable inference. Moreover the problem of inferring objectives is much more complex than many of the other analysis schemes seem to imply. Section 2.3 of the Sussex Scheme is given below and in spite of the clear differentiation of the questions, almost every sub-section could be related to the question of objectives in some manner.

Many of these questions are handled by the St. Gallen Scheme in a similar kind of way, though some are subsumed under 'subject specific aims' and some under 'method'. This does lead to some overlap (see for example, sections 2.2 and 4.2) but the most noticeable difference is the absence of any prior descriptive section.

2.3 Structure of the Materials (Sussex Scheme)

2.3.1 How do pupil materials and teacher materials fit together and are there any obvious points of conflict?

2.3.2 Describe the coverage of the subject matter in terms of knowledge, skills and attitudes. To what extent is the material explicitly concerned with the presentation of values or the development of attitudes?

2.3.3 Indicate the generality and the level of abstraction of the subject matter. Does it mainly consist of factual material or does it try to communicate specific concepts, general concepts or principles? What are the roles of illustrations, applications and examples? What kinds of argument are used and how much supporting evidence is given? Does it develop specific techniques or general patterns of behaviour?

2.3.4 What pre-requisite knowledge and skills are needed by the pupil?

2.3.5 How is the subject matter organised in terms of structure, sequence or cumulative build-up; and how do the pupil tasks change?

2.3.6 What image of the subject matter is most likely to be communicated? What are its boundaries and what are its chief concerns? What implicit values can be detected in the selection or interpretation of information?

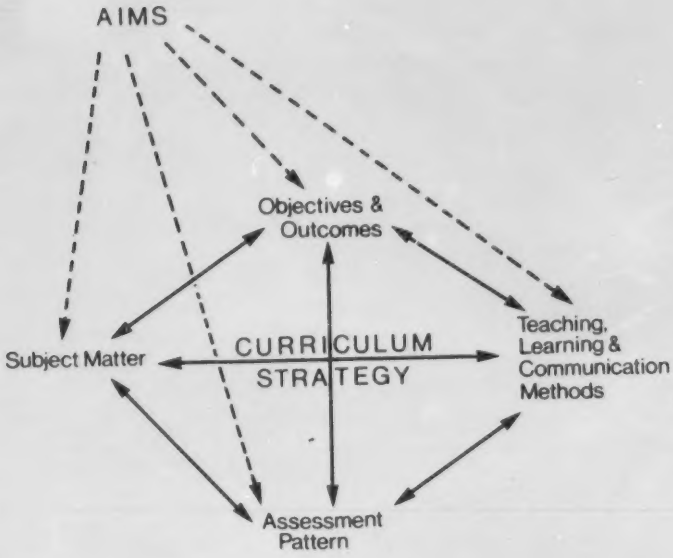
2.3.7 How do pupil tasks and teacher activities relate to each other and how do they vary with the subject matter?

2.3.8 How is the assessment related to pupil tasks (congruency?) and to the subject matter (uniformity of emphasis?)

2.3.9 Where and if there are stated objectives how do these relate to pupil tasks and to the assessment pattern?

Although the Materials in Use part of the Sussex Scheme does not demand any inferred statement of objectives, the Introduction and Guide to the Scheme recommends a curriculum model which includes "Objectives and Outcomes" as an element. Unlike the Tyler model, however, our model does not concern itself with the order in which decisions may or may not have been taken. Apart from according some priority to general aims, the other four elements are taken together as a "Curriculum Strategy" without any presumptions about priority.

Figure 3. The Curriculum Model Used at Sussex



Though individual curriculum theorists have their views as to which of these four elements ought to take precedence, we find in practice that it is possible to find curricula in which each of the four is dominant. Whereas many curriculum theories and projects have emphasised objectives, traditional curricula probably emphasise subject matter. The progressive movement tends to start with the teaching, learning and communication methods; and where public examinations exist it is the assessment pattern that has the upper hand. The model does however indicate that making an initial choice in any one of the four areas is

likely to limit the range of choice in the other three. That is why the four elements are shown in dynamic interrelationship.

The particular terms we have chosen for the four elements also need some explanation. Subject matter is chosen in preference to 'Content' because we believe the term includes the organisation and structuring of the content as well as its selection. Then in using the term Teaching, Learning and Communication Methods we have deliberately amalgamated two of Schulz's elements - methods and media - with Kerr's 'school learning experiences'. We also wish to draw attention to considerations of design, style and language.

Apart from a brief SSEC question about literary style, only the Sussex and St. Gallen Schemes appear to be concerned with language; the Sussex Scheme concentrates on the language in the pupil materials, while the St. Gallen Scheme asks about the advice given to the teacher on classroom language.

Our reason for using the term Assessment rather than the broader and more popular term 'Evaluation' is to emphasise the descriptive nature of our model. The manner, either explicit or implicit, by which a pupil is assessed is an essential part of a curriculum description. But curriculum evaluation is a separate activity which properly belongs in a development model rather than a descriptive model. Moreover, it is the activity in which the analyst himself is engaged.

A further difference from the Tyler, Kerr and Schulz models is the use of the term Objectives and Outcomes rather than just 'Objectives' or 'Intentions'. This helps to avoid confusion between explicit and implicit author objectives, and between author objectives and teacher objectives; because we can use the term 'objectives' to refer to explicit statements by the author and the term 'outcomes' to describe inferences made by the analyst. Any teacher using the materials, who accepted the analyst's inferences and proposed no modifications to the materials, would then be endorsing both stated objectives and inferred outcomes as his own 'teacher objectives'. This approach is important because often there are no stated objectives. Even when they do exist, it is not uncommon for many implicit intentions to be omitted; and there also may be conflict between the explicit and implicit intentions. Moreover, since unintended outcomes are familiar in curriculum implementation it is important that the analyst does not ignore them. Though the opposite danger, that of

00046

trying to attribute fixed outcomes to curricula which are deliberately designed to be 'open', should also be avoided. In many areas of the arts and humanities close attention to outcomes could be inappropriate.

Our reason for recommending a model at all is the strength which we find it gives to Part 3 on the Materials in Use. It helps the analyst to focus on the key decisions which might be said to constitute a 'curriculum strategy', to see which decisions have already been taken and which are left open, where there is scope for modification and where there is none. This is why we have recommended the analyst to infer the main kinds of objectives and outcomes that would be endorsed by adoption. There is no suggestion that objectives inferred in this way should be used prescriptively for lesson planning unless the author clearly indicates that that was his intention. But, with the reservations about specifying objectives already discussed above, we still maintain that some attempt to describe intended behaviours at a more precise level than general aims is often essential for communicating what adoption is likely to involve. However, since some people prefer not to use a model or to use a different model, we have not built our model into the structure of the scheme itself; and, given the present state of debate over curriculum models, this flexibility is a considerable advantage.

In summary, then, most schemes approach the Descriptive-Analytic Function by using section headings derived from a curriculum model, the exceptions being the Swedish and Sussex Schemes. Two schemes (Berkeley, Sweden) remain at the descriptive level with very little analysis, and one scheme (St. Gallen) concentrates on analysis with very little description. Three (SSEC, Eash, Häussler-Pittman) combine description with analysis by using the Tyler-Bloom model. But the Sussex Scheme avoids endorsing any curriculum development model by adopting a more cautious four-stage approach - Description (2.1, 2.2), Inferred Structure (2.3), Curriculum Strategy (3.1) and finally Patterns of Use (3.2, 3.3) - in which the relationship between author, analyst and user is explicit rather than implicit and realistic rather than idealistic. The approach to inference over the first two stages is not dissimilar to that advocated by Frey (1969); though we would perhaps be more hesitant than he is in claiming that objectivity was our ultimate goal. Even structures can be perceived differently by different people, and strategies and patterns of

00047

use are even more problematic (cf. Brügelmann (1974) for a recent discussion of problems of objectivity in curriculum research). Our modest goal is to see the analyst's roles as those of 'disclosing meaning' and 'informing decision-makers'; and to hope that he can find perceptual and conceptual frameworks which fit those of his readers.

Approaches to the Evaluative Function

In interpreting the various analysis schemes under consideration, it is useful to regard the evaluative function as sandwiched between the descriptive-analytic function and the decision-making function. It is heavily influenced by the presence or absence of these other functions as it can take the form of either a critical commentary on a descriptive analysis or a preparation for decision-making or both. Left on its own without either of the other functions it becomes like many book reviews, a mere vehicle for the reviewer's virtuosity and of little use to anyone who is not prepared to accept the reviewer's opinions without questioning. A sandwich with one side missing is viable but sandwich filling on its own is not.

Of the seven schemes under review, only the Berkeley Scheme omits the evaluative function altogether. Three of them (Eash, St. Gallen, Häussler-Pittman) have merged evaluation with description; and three (SSEC, Sweden, Sussex) have separate evaluation sections. But even when there is a separate evaluation section the total separation of the evaluative and descriptive-analytic functions is impossible. Three kinds of descriptive-analytic questions inevitably carry evaluative overtones. One of these concerns consistency, e.g.

> Do the forms of activity accord with the aims and the proposed methods? (St. Gallen)

A second concerns implementation, e.g.

> How do children entering late adjust to the curriculum? (Berkeley)
> With what kinds of pupils will the materials be most useful and successful? (SSEC)

The third concerns the use of checklists, which inevitably evaluate by drawing attention to omissions. The types of question often included in such checklists are illustrated by the following table from an analysis using the Swedish Scheme (Nyström, 1974)

2.3.3 Pedagogical disposition (Swedish Scheme)

	Teacher material	Pupil material
. Division into basic and advanced course		●
. Arrangements for low performers	0	
. Revision instructions depending on answers to diagnostic tests	0	
. Self-instructional design		0
. Reasons given for studying sections of the subject		
. Reference to current problems at home, at work and in society at large		●
. Instructions for co-operation between the pupils	0	

0 indicates brief treatment and ● exhaustive treatment, and this particular analysis added a footnote to the effect that 'the learning materials contain no special arrangements for high performers'.

There is considerable danger in using descriptive checklists without an additional evaluation section, because of the partial nature of their coverage. It is certainly true that many features of materials which were once regarded as 'desirable extras' are now regarded as 'necessities'. But it is all too easy to encourage an approach to materials selection which is analogous to buying a car on the basis of its appearance and fittings without examining its engine. This problem is not necessarily avoided by including an evaluation section, as we shall see below.

Although the originally published version of the SSEC Scheme (Stevens and Morrissett, 1968) had six sections and was mainly descriptive-analytic in function, many published analyses using the scheme have added a seventh section entitled User's Evaluation. Two such sections are included with Scheme 1 at the end of this paper. Both are organised as a repeat of the first six sections in which critical evaluative questions replace descriptive questions. Thus under 1.4, Money Cost, we meet:

'Would the aggregate cost permit adoption?'

00049

and under 5.3, Teaching Forms or Modes or Transactions, we find:

> 'Are the strategies used in the material supportive of the content and objectives of the author, and are they varied enough to interest most individuals in the learning process?'

Each published analysis has used different questions within the same overall framework. So it appears that the questions in this seventh section are supplied by the analyst rather than by the scheme.

In the Sussex Scheme the analyst is also required to supply the evaluative questions, though not according to the framework of the description. We have found that linking evaluative points to each descriptive element in isolation leads to repetition and distortion by over-segmentation. So we have organised our evaluation more in accord with subsequent decision-making, in order to guide successive decisions about Aims, Curriculum Strategy, Materials and Implementation.

4.2 Give arguments for and against pursuing the particular aims endorsed by the materials in this area of the curriculum. Relate your arguments to potentially competing aims, the patterns of use outlined in Part 3 and various forms of traditional practice.

4.3 Give arguments for and against the particular curriculum strategy assumed or advocated for achieving these aims, again relating your arguments to potentially competing strategies, the patterns of use outlined in Part 3 and various forms of traditional practice.

4.4 Evaluate the materials and their adequacy for supporting the aims and curriculum strategy.

4.5 Giving special attention to patterns of use (3.3) and implementation problems (3.4), evaluate the feasibility of using the materials in various contexts.

In addition to the scheme itself, we have offered a checklist of questions for each of the above sections in our Introduction and Guide (Chapter 4). Most of these questions are couched in fairly general terms and are only designed as "starters" for the analyst's own questions. Their main purpose is not to restrict the analyst but to ensure that a wide range of issues are considered, including all those normally debated by practising teachers, specialists in the subject field and its pedagogy, and specialists in educational theory (curriculum, philosophy, psychology and sociology). Thus our questions are in no sense obligatory. For we are in strong agreement with Payne's assertion that no one set of criteria is applicable to all situations. Payne (1969) gives two reasons: lack of agreement within the field of curriculum on

models or rationales for curriculum development, and conflicting theories regarding learning. We would add two further reasons: variation from context to context, and variation from subject to subject. Hence we would strongly reject the approach of Tyler and Klein (1971) in their 'Recommendations for Curriculum and Instructional Materials'. The seven major sections of their list of 'standards' are shown below, together with some illustrative recommendations selected by the authors themselves (Klein and Tyler, 1969). These are all labelled as Essential, Very Desirable or Desirable.

I Rationale. Statements under rationale are those which deal with a presentation of how decisions were reached about the choice of objectives, content, and the like.

R1. The value of the objectives must be substantiated: ESSENTIAL
R5. Learning opportunities should be directly related to the behaviour and content of the specified objectives: ESSENTIAL

II Specifications. Specifications refer to outcomes.

S1. The manual should state in detail the objectives: ESSENTIAL
S2. Objectives should be specified operationally, i.e. behavioral responses of students: ESSENTIAL
S3. Objectives should be consistent with each other: DESIRABLE

III Appropriateness. This category includes statements regarding the kind of learner for whom the material is developed.

A1. The kind of student for whom the curriculum and instructional materials are designed should be specified: ESSENTIAL (Comment: Characteristics such as age, sex, prerequisite skills, socioeconomic class are to be reported).
A2. The curriculum and instructional materials should be revised at appropriate intervals: ESSENTIAL

IV Effectiveness. This category pertains to characteristics for determining impact.

E1. Technical manuals should cite sources of available evidence to document any claims made about effectiveness and efficiency: ESSENTIAL
E3. Evaluation should be utilized when appropriate in the process of instructional development. Also, evaluation should be used when materials are completely developed: ESSENTIAL

V Conditions. This refers to the characteristics, provisions, and procedures necessary if the curriculum and materials are to be used.

C1. The manual must indicate the qualifications that are required of the teacher in order to use the materials effectively: ESSENTIAL
C2. If the teaching personnel do not possess the qualifications required for using the materials, some provision must be made. This may take the form of a teacher-training package: DESIRABLE

00051

VI Practicality. These recommendations relate to factors which are basic for use in a particular setting.
- P1. The technical manual should indicate which instructional materials are required and whether any of the instructional materials can be re-used: ESSENTIAL
- P3. The technical manual should indicate the necessary facilities and care required: DESIRABLE

VII Dissemination. This category relates to effective communication practices.
- D1. Provision should be made for continued dissemination of new materials, new approaches, and new studies: VERY DESIRABLE
- D2. Appropriate channels and means to reach concerned audiences, for example researchers, school personnel, and the lay public, should be utilized: DESIRABLE

Many of these standards would be acceptable to most analysts, but the approach on the whole suffers from two basic weaknesses:

1. The emphasis on the Tyler-Bloom model of curriculum development, which is by no means universally accepted, is so dominant that the authors seem far more concerned with whether the model was used 'according to the book' than with criteria relating to the value of the product.
2. The requirement for all materials to be accompanied by massive documentation assumes that good curriculum materials can only be produced by 'big batallions' and rules out relatively small-scale inspirational innovation. It also comes dangerously close to institutionalising Scriven's caricature of a mountain bringing forth a mouse (Scriven, 1967).

By implication a third rate football team which has the latest manual on the tactics of a game and is superbly well-trained and prepared would be preferred to a first rate team which relied more on the individual talents of its players. Of course it is important for decision-makers to understand the sources of a curriculum's objectives but the best authors are not always the best theoretical thinkers. Nor are their views on their own materials always the most reliable. We believe there is a limit to the extent to which the responsibility for evaluation can be pushed back on to the author and away from the decision-maker. Hence the importance of an independent analyst, and of what Scriven (1972) has called 'Goal Free Evaluation' (a form of evaluation in which the evaluator looks for outcomes and criteria without special reference to goals formulated by the author).

The behavioral psychology model of curriculum development is even more dominant in the Eash Scheme, as can be seen from the section on Objectives reproduced below.

00052

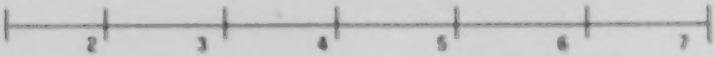
AN INSTRUMENT FOR THE ASSESSMENT OF
INSTRUCTIONAL MATERIALS (Eash, 1972)

I/Objectives

	Yes	No
A. Are there objectives stated for the use of the material?	___	___
1. General objectives?	___	___
2. Instructional objectives?	___	___
3. Are the objectives stated in behavioral terms?	___	___
4. If stated in behavioral terms, do the objectives specify:		
a) type of behavior?	___	___
b) conditions under which it will appear?	___	___
c) level of performance expected?	___	___
5. List examples of objectives.		
B. If there are no objectives stated for the use of the material, are the objectives instead implicit or readily obvious?	___	___
1. If yes, please outline below what objectives you believe govern the purpose of the material.		
C. What appears to be the source of the objectives (both stated and implicit objectives)?		
1. Are the objectives related to a larger frame of instruction?	___	___
2. Are the objectives specific to a subject skill?	___	___
3. Are the objectives related to a broader behavioral pattern that is to be developed over a period of time?	___	___
4. What seems to be the emphasis of the objectives: (Check as many as are appropriate.)		
a) Attitudinal _____ b) Motor skills _____		
c) Cognitive development skills _____		
d) Subject skills _____		
5. Are the objectives drawn from: (Check as many as are appropriate.)		
a) A learning approach _____		
b) Society needs (citizenship)_____		
c) Demands of subject _____		
d) Demands and needs of child _____		

D. Quantitative rating: objectives

Directions: Please make an X on the rating scale below at the point that represents your best judgment on the following criteria. Please place the X ON a specific point.



Objectives--vague, unclear, or missing. Those included not useful. Fails to distinguish between general and instructional objectives, mixes various types of objectives, confusing to the teacher.

Average, some of the criteria for objectives met, some missing, at times inconsistent, objectives only partially operational for the classroom teacher.

The objectives are stated clearly and in behavioral terms. Both general and instructional objectives are stated in a consistent conceptual framework. Excellent, one of the best, useful for a teacher.

Like Tyler and Klein (1971), Eash seems far more concerned with whether the curriculum has been developed according to the 'appropriate' model than with whether it is any good. It is difficult to see how any part of Section C could inform the potential user, and the phrase "consistent conceptual framework" in Section D bears no relation to the preceding description. A more fundamental criticism, however, is Eash's emphasis on reliability at the expense of validity. He omits many of the questions which are most likely to discriminate between curricula; and it is possible to imagine two totally dissimilar curricula, which conformed to the behavioural model, coming out of the analysis with almost identical profiles. This is perhaps because he seems to regard evaluation as essentially a convergent activity in which analysts, operating according to generally agreed criteria, protect the user from having to decide much for himself.

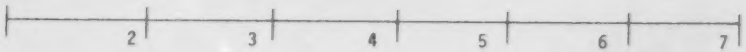
The mainly descriptive schemes (Berkeley, St. Gallen, Häussler-Pittman) avoid this issue by restricting their evaluative function, while the Swedish Scheme minimises it through its central concern with the National Curricular Guidelines. Thus it permits divergence, but only within the overall framework of the National Guidelines. Nevertheless, its main function is seen (Nyström, 1974) as preparing the evidence for the user decision-makers, without pre-empting the judgements that should properly be left to them. The Sussex Scheme, however, goes well beyond this and

deliberately encourages a divergent approach to evaluation. Following Stake's 1967 model (Fig. 1, page14) it aims to relate the Intents (as revealed by the first half of the analysis) to the differing Standards of various experts and user groups. Hence it not only anticipates different Judgements but also acknowledges different Standards; whereas the other schemes all appear, either explicitly or implicitly to assume common standards. Thus the analyst is expected to present the arguments for and against the aims, curriculum strategy, and detailed design of the materials; and to relate them to potential alternatives, to different patterns of use and to various forms of traditional practice. This has certain similarities with what is now being called the Adversary Model of Evaluation (C.S.E., 1973) in which two advocates deliberately set out to argue the cases for and against the material. With us, however, the analyst has the difficult task of being both proponent and critic; and also that of relating his arguments to the different frames of reference of different user groups. For this reason we would strongly recommend that analyses be undertaken by small groups rather than individuals.

Most of the schemes seek information about developmental testing and formal evaluation studies, but only the SSEC and Sussex Schemes ask the analyst to comment on the information. These two schemes also offer scope for the incorporation of reviewer and user opinions, though this is given very little emphasis by Sussex. With the SSEC Scheme, on the other hand, it is a user group which completes the evaluation section; and there is an uneasy compromise between the presentation of user experience and judgements and the preparation of unbiased evidence for other decision-making groups. What results is essentially an evaluation of the consistency and feasibility of the materials without much reference to alternative options or alternative goals. Moreover, one gets the uncomfortable impression that it is only the use of the materials by highly innovative, motivated and flexible teachers that is being evaluated. The Swedish Scheme, with its survey of 15 teachers and 75 pupils, is alone in attempting to incorporate some fairly systematic user evaluation; and it clearly separates it from the intrinsic evaluation section. But is this going beyond the functions of curriculum analysis, which has never claimed to be more than one aspect of curriculum evaluation?

Approaches to the Decision-Making Function

As mentioned above there are two separate kinds of decisions which curriculum analyses could guide, selection decisions and implementation decisions. The most direct approach to selection is that of Eash who summarises each of his four sections on Objectives, Organisation of the Material (Scope and Sequence), Methodology and Evaluation with a seven point rating scale. The one on objectives (1D) has already been quoted (page 50) and a fifth scale, summarising the whole evaluation is given below:



Poorly designed, conceptually weak and inconsistent or haphazard design. Does not appear to have been field tested: inaccurate assumptions about children who will be using material. Overpriced, underdeveloped, a bad bargain.

Has strengths and weaknesses, but most teachers would find satisfactory. On the balance comes out about average, would need considerable supplementary effort by teacher. A compromise of price and availability.

Excellent, one of the best by comparison with other available material. Theoretically strong and carefully field tested. Shows consistent instructional design. Would recommend highly; well worth the price.

Clearly the judgement left to the decision-maker is semi-automatic, and one wonders why anyone in a position to make selection decisions should be regarded as having so little capacity for judgement. Indeed such a gross oversimplification of the problem of making curriculum decisions is alarming.

At the opposite end of the decision-making continuum is another piece of work sponsored by EPIE, that of David Elliot (1972) on the Selection of Materials for Early Childhood Education, in which the decision-makers are required to make a number of decisions about the kind of curriculum they want before considering the appropriateness of any particular set of materials. Southgate and Roberts (1970) use a similar procedure in 'Reading - Which Approach' and it is possibly no accident that both they and Elliot are working in an area, namely the infant school, for which the relationship between theory and practice has been more thoroughly worked out than most. This approach clearly depends on the field being sufficiently well organised to be able to assign different sets of materials to their

appropriate positions on some kind of decision-making flow-chart. But it is our contention that this is rarely the case. It is only by omitting half the important criteria that sub-fields of curriculum can appear to have clearly defined structures of this sort (the commonest schemes of this kind are those which concentrate on subject-specific questions alone, or else on questions devised from a single curriculum development model). When one recognises this state of theoretical disorganisation and especially the width of the gap between the theoretically-argued rationale and an implementable curriculum strategy, it is not surprising that many decision-makers have difficulty in deciding what sort of curriculum materials they want. They would rather look at what is available.

Our arguments in favour of presenting decision-makers with analyses of curriculum materials which interest them, rather than getting them to decide first on the kind of curriculum they want and then only secondly on the materials which best fit their 'ideal', are as follows:

1. It is closer to actual practice. People are more likely to be attracted by something new than just to decide they need a change.
2. Few people find it easy to work out their views on the kind of curriculum they want unless it is very similar to one they already use. It is easier for them to consider the issues in more concrete terms with actual samples before them.
3. A curriculum is a complex entity, subject to many different constraints and synthesised from many different strands of theoretical thinking and practical experience. This makes it impossible to characterise in any simple manner.
4. It achieves the right balance between judgement of effectiveness and judgement of the appropriateness of goals.

In addition, we believe that it is helpful to include a 'decision-makers brief' at the end of each analysis which attempts to summarise the main judgements and decisions that will need to be made. But such a brief has to include implementation decisions, and needs to be specific to the local context. So the Sussex Scheme has included a final optional section for completion by a member or close associate of each separate user group:

00057

Part 5. Decision Making in a Specific Context

5.1 Constraints of the Particular context
5.2 Possible Patterns of Use
5.3 Implementation Strategies
5.4 Summary of Decision Issues

Our concluding table is an attempt to summarise the main points discussed in this chapter; and it is followed by detailed outlines of the seven schemes.

Features \ Schemes	SSEC	Berkeley	Eash	St. Gallen	Kiel	Sweden	Sussex
Includes more than cursory description	✓	✓	X	✓	✓	X	✓
Analyses Structure	✓	X	✓	✓	✓	X	✓
Has Separate Evaluation Section	Opt	X	✓	X	X	✓	✓
Incorporates Available Information on Testing	✓	X	X	✓	✓	✓	✓
Incorporates User Opinion	Opt	X	Opt	X	X	✓	Opt
Considers Alternative Patterns of Use	X	X	X	X	X	X	✓
Discusses Implementation Problems	✓	✓	X	✓	✓	X	✓
Does Not Assume Tyler-Bloom Model	X	✓	X	✓	X	✓	✓
Convergent or Divergent Evaluation	N	N	Con	N	Con	N	Div

Opt = Optional, N = Neither, Con = Convergent, Div = Divergent

00058

SCHEME 1: The SSEC Scheme

A condensed version of the Curriculum Analysis Systems used by the Social Sciences Education Consortium, Boulder, U.S., published by W.W. Stevens and I. Morrissett in EPIE Forum Vol. 1, Nos. 4/5 Jan. 1968. A seventh section entitled Users Evaluation was published later and is also reproduced.

1.0 DESCRIPTIVE CHARACTERISTICS

What are the general characteristics of these materials? How can they be described and characterised?

1.1 Media available from the producer

What is the textbook like? Number of pages? Durability? Are there readings? Teacher's guide? Suggested instructional strategies? Recommended teacher behavior? Are there tests with the package? Lesson plans? Films? Film strips? Records? Transparencies? Artifacts?

1.2 Sources of materials

Who are the author(s) and publisher? What are their contributions and roles in this field?

1.3 Time required

How long does it take to teach the package? Can some parts be taught as independent units?

1.4 Style

What is the layout? The literary style?

1.5 Money cost

What do the materials cost per student? Per teacher? Per teaching station? For the school?

1.6 Availability

When and how can we get the materials?

1.7 Performance data availability

Have the materials been tested by the author? Are school reports available? Are there reports on controlled experiments?

1.8 Subject area and content

What discipline(s) is (are) covered in the package? Is there synthesis of disciplines?

1.9 Dominant characteristics of curriculum form

Does the material stress text material, stories, games, case studies, documents, laboratory exercises, multi-media?

00059

2.0 RATIONALE AND OBJECTIVES

Why did the author develop the materials and what are the expected outcomes?

2.1 Rationale

What are the author's assumptions about the goals of education with respect to the individual and to society? Are there explicit or implied assumptions about the nature of society and how man is related to society? Are the goals and assumptions internally consistent? What are the author's views on how the curriculum contributes to the goals for the individual and for society?

2.2 General objectives

What are the generalised student outcomes that can be expected from the use of these materials? What should the student be able to do generally in the cognitive domain? The affective domain?

2.3 Specific objectives

In the cognitive domain, is the student called upon to perform processes which involve the acquisition of knowledge? Comprehension? Application? Analysis? Synthesis? Evaluation? (cf. Bloom's taxonomy.) Is the student called upon to demonstrate the nature and degree of his involvement with value positions? Is he expected to be aware of certain values or valued objects? Respond to them? Value them? Organize them into a consistent system? Completely internalize them? (cf. Krathwohl's taxonomy.)

2.4 Behavioral objectives

Does the author word his specific objectives in such a fashion that the verbs demonstrate student action-behavior that is clearly observable and/or measurable? Are specific guides to observation and measurement given? Are tests and/or specific tasks supplied?

3.0 ANTECEDENT CONDITIONS

What are the particular conditions for which the materials are designed, or under which they are most likely to be successful?

3.1 Pupil characteristics

With what kinds of pupils will the materials be most useful and successful? Urban or rural? White, Negro, or Mexican? Under-achievers? College-bound? What previous pupil preparations and/or aspirations and/or achievements are required? What are minimum initial levels of cognitive, social, and motoric skills?

00060

3.2 Teacher capabilities and requirements

What are the teacher prerequisites for successful use? Special courses? Specifiable type and length of teaching experience? Unusual intelligence or skills? High motivation?

3.3 Community

Is the community hostile or open to innovation? Are there elements in the curriculum that might be particularly attractive or offensive to the community?

3.4 School

Do the materials and methods require special teaching facilities or circumstances? Large or small rooms? Flexible scheduling? Special equipment? What kind of rquired library facilities?

3.5 Articulation

Do the materials fit well with the existing curriculums that will precede and follow them? Do they fit well with materials in other subjects studied simultaneously?

4.0 CONTENT

What specific (content-related) changes are intended in the knowledge, attitudes, and behavior of the students?

4.1 Cognitive structure

What is the subject matter? What is the author's overall view of the concepts, processes, and factual content of the subject, and what parts of these does he wish to teach the students? To what extent do the materials incorporate the concepts, processes, and factual content of anthropology, geography, economics, history, political science, psychology and sociology? To what extent do they establish and/or use concepts, processes, and facts that cut across or synthesize the disciplines? What are the actual cognitive outcomes likely to be?

4.2 Affective content

What is the author's view of the affective content and implications of his subject, and what parts of these does he wish to teach the students? Does the author ignore values, assert a value-free approach, or explicitly incorporate values in the materials? Does he attempt to teach values, or to teach about values? Are the valued objects or situations intellectual? Social? Ethical? Economic? Political? What are the actual affective outcomes likely to be?

5.0 INSTRUCTIONAL THEORY AND TEACHING STRATEGIES

What is the learning theory that is explicit or implicit in the materials? What are the teaching strategies, and are they logically related to the learning theory?

5.1 Author's orientation

What are the author's theories of learning, teaching, and curriculum construction?

5.2 Elements of instructional theory, and their uses in teaching strategies

How are predispositions to learning created? What is the structure and form of knowledge, and do their order and sequence conform with the learning theory? What are the forms, sequence, and pacing of reinforcement?

5.3 Teaching forms, or modes, or transactions

What are the dominant teaching forms? Teacher-to-student (exposition, demonstrations)? Resource-to-student (texts, films, transparencies)? Student-student interactions (role-playing, debate, simulation)? Student-resource interactions (laboratory, documents, programmed instruction)?

5.4 Use of teaching forms

What are the patterns of use of teaching forms? Do they have balance and variety? Are they compatible with the instructional theory?

6.0 OVERALL JUDGMENTS

What can be gleaned from the foregoing analysis and from outside sources that will help in the formation of overall, evaluative judgments about the material?

6.1 Sources of evaluative data

What conclusions are available from analysts? From evaluators and researchers? From standard tests? From classroom observations by teachers and other observers? Is any information available about out-of-classroom effects of the materials?

6.2 Effects predicted by analysts and reported by observers

What are the cognitive, affective, and social effects on students? What is the experience of teachers with respect to ease of use? With respect to required training or special preparation? What are the effects on other classes and on the whole school? What are the effects on the community?

6.3 Comparisons

How do reports on the predicted or actual effects compare with the author's intentions? With the effects of other curricula? With the standards of the analyst?

6.4 Recommended uses

What summary statements can be made about the overall success of the materials and the conditions under which they should and should not be used?

00062

USERS' EVALUATION QUESTIONS FOR THE SSEC SCHEME

Two versions, taken from 'Educational Product Report' Vol. 3 No. 1 (1969)

VERSION I

VERSION II

1.0 - Descriptive characteristics

Descriptively speaking, are the media an improvement over what is currently being used in the school system?

Do the sources express the best expert thinking to date on this type of curriculum?

Does the curriculum fit the time requirement of the school?

Is the school's curriculum flexible enough to adapt to the new materials?

Would the aggregate cost permit adoption?

Is the subject area appropriate for the overall school curriculum?

Is the suggested time adequate for student understanding and comprehension?

2.0 - Rationale and objectives

Is the author's rationale clearly stated and realistically attainable?

Is the author's rationale compatible with the user's; the school system; the community; and the society?

Does the program provide a balance in its attention to cognitive, affective and skill objectives?

Could the students attain the stated objectives?

Are the evaluative devices for measuring student learning adequate and sufficient?

Could you measure the attainment of affective objectives? Do you think it would be possible to measure them?

Is the author trying to teach specific values or biases?

00063

Are the general cognitive objectives consistent with the author's rationale?

Are the general affective objectives consistent with the author's rationale?

Are the above objectives practical; realistic?

Are the specific objectives consistent with and do they develop the general objectives?

3.0 - Antecedent Conditions

Will the material be inappropriate for any significant groups of pupils in the school system?

Will the teachers in the system be able to handle the materials without additional training?

Are the facilities of the school adequate for the use of the program?

Were the difficulties encountered because students have not had units of materials which usually precede this unit?

To what extent did you try to integrate the curriculum into the materials and content ordinarily taught in the grade?

4.0 - Content

Does the author clearly specify criteria for the selection of his substantive content?

Are the processes used in the material content consistent with the processes used in the discipline?

Does the content support the author's stated objectives and rationale?

Does the author assume an understanding of the content - knowledge, skills and value issues - which the average teacher does not have?

Does the author presuppose knowledge by the students which many of them do not have?

In general, is the level of abstraction of concepts and generalizations - and are cognitive skills to be learned - too easy or too difficult?

9000

Does the content reflect a logical conceptual scheme?

Does the content teach values rather than teach about values?

Would the materials make sense to the pupils; and do they regard them as meaningful?

5.0 - Instructional Theory and Teaching Strategy

Can the author's instructional theory be determined by the curriculum construction and development used in the materials?

Does the material create and sustain a favourable predisposition for learning among students?

Is the ordering of learning based on an acceptable theory of learning?

Are the strategies used in the material supportive of the content and objectives of the author, and are they varied enough to interest most individuals in the learning process?

To what extent was the learning theory, and the overall strategy derived from that theory, appropriate and effective?

Are the student materials (written, audiovisuals, games, etc.) and strategies suited to the abilities and interests of the students?

To what extent is the content to be learned - the knowledge, skills and value issues - clearly stated and developed in the materials?

Is the information sequenced for learning?

How effective are the materials in motivating students?

Is the strategy economical with respect to time and effort?

To what extent could the same learning be organised more efficiently?

If there are different strategies used for each general type, to what extent does the strategy permit efficient and effective achievement of the learning objective?

S9000

If revisions of this type were made or should be made, is it possible to make them and still maintain the integrity of the curriculum?

Could you use the teaching strategies and lesson plans effectively to permit students to achieve the stated objectives and to like what they are doing?

Is the purpose of each teaching strategy clearly evident to the teacher?

Are the instructions to the teacher clear and concise?

Could you use the strategy or strategies with ease or only after some practice?

Did you enjoy using them once you learned how and why they were useful?

How flexible is the curriculum? To what extent does the curriculum allow teachers to choose strategies, materials and content?

00006

6.0 - Project evaluator - Analysis

Does the author have a philosophy of evaluation?

Did evaluation during the formative stage of curriculum development produce an on-going revision of the materials?

Did the instruments used in evaluation measure the attainment of the author's objectives?

Were the instruments used valued?

SCHEME 2: The Berkeley Scheme

Taken from the six analyses of Elementary Science Curricula published by The Far West Laboratory for Educational Research and Development, Berkeley, California in 1970 (Edited by C. Hutchings).

GOALS AND OBJECTIVES
What is the rationale for the curriculum development?
What are the goals?

CONTENT AND MATERIALS
What is to be learned?
What relationship is there to other fields of learning?
How are content and materials organized?
Are tests provided?
What materials are used?
- Description of program parts,
- Contents of Standard Part B Kit (an audiovisual description of the materials)
- Materials not included in Part B Kit

CLASSROOM STRATEGY AND ACTIVITIES
What is the pattern of activities in a lesson?
What is the teacher's role?
What teacher preparation is required?
What do the students do?
How are students tested and evaluated?

IMPLEMENTATION REQUIREMENTS
What subject areas and grade levels are covered?
Is it a complete or supplementary curriculum?
How much of the curriculum is now commercially available?
Who is the publisher?
What is the target student audience?
Must the curriculum be introduced one grade at a time?
How do children entering late adjust to the curriculum?
Are particular forms of school organization required?
What is the administrator's role?
What teacher preparation and in-service training is required?
How much time does the curriculum require?

00067

SCHEME 3: Maurice Eash (1972)

Reproduced from Curriculum Theory Network, Vols. 8 - 9

AN INSTRUMENT FOR THE ASSESSMENT OF
INSTRUCTIONAL MATERIALS (FORM IV)

	Yes	No
I/Objectives		
A. Are there objectives stated for the use of the material?	___	___
1. General objectives?	___	___
2. Instructional objectives?		
3. Are the objectives stated in behavioral terms?	___	___
4. If stated in behavioral terms, do the objectives specify:		
a) type of behavior?	___	___
b) conditions under which it will appear?	___	___
c) level of performance expected?	___	___
5. List examples of objectives.		
B. If there are no objectives stated for the use of the material, are the objectives instead implicit or readily obvious?	___	___
1. If yes, please outline below what objectives you believe govern the purpose of the material.		
C. What appears to be the source of the objectives (both stated and implicit objectives)?		
1. Are the objectives related to a larger frame of instruction?	___	___
2. Are the objectives specific to a subject skill?	___	___
3. Are the objectives related to a broader behavioral pattern that is to be developed over a period of time?	___	___

4. What seems to be the emphasis of the objectives:
(Check as many as are appropriate.)

a) Attitudinal _____ b) Motor skills_____

c) Cognitive development skills_____ d) Subject

d) Subject skills ____

5. Are the objectives drawn from:
(Check as many as are appropriate.)

a) A learning approach____

b) Society needs (citizenship)_____

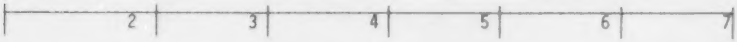
c) Demands of subject_____

d) Demands and needs of child_____

00068

D. Quantitative rating: objectives

Directions: Please make an X on the rating scale below at the point that represents your best judgment on the following criteria. Please place the X ON a specific point.



Objectives -- vague, unclear, or missing. Those included not useful. Fails to distinguish between general and instructional objectives, mixes various types of objectives, confusing to the teacher.

Average, some of the criteria for objectives met, some missing, at times inconsistent, objectives only partially operational for the classroom teacher.

The objectives are stated clearly and in behavioral terms. Both general and instructional objectives are stated in a consistent conceptual framework. Excellent, one of the best, useful for a teacher.

II/Organization of the Material (Scope and Sequence)	Yes	No
A. Has a task analysis been made of the material and some relationship specified between the tasks?	___	___
B. If a task analysis has been made, what basis was used to organize the materials: (Check as many as are appropriate.)		
1. Errorless discrimination ___ 2. Simple to complex ___		
3. Figure-ground ___ 4. General to specific ___		
5. Logical order ___ 6. Chronology ___		
C. If no indication of a task analysis has been made what assumptions do you believe the authors have made concerning the organization of the instructional sequence of the material?		
D. Is there a basis for the scope of the material included in the instructional package?	___	___
1. If there is a basis, is it:		
a) Related to a subject area	___	___
b) To a motor skill development	___	___
c) To a cognitive skill area	___	___
d) To an affective response system	___	___
e) Other (specify)_____		
2. Has the scope been subjected to analysis for:		
a) Appropriateness to students	___	___
b) Relationship to other material	___	___

E. Is there a recommended sequence? Yes ___ No ___

1. What is the basis of the recommended sequence? (Check as many as appropriate)

a) Interrelationships of a subject ___

b) Positive reinforcement and programmed sequence ___

c) Open ended development of a generalization ___

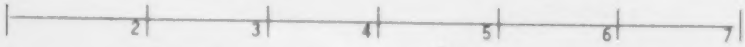
d) Advanced organizer (cognitive) ___

e) Other (please specify) _____

F. Briefly outline the scope and sequence.

G. Quantitative rating: organization of the materials (scope and sequence)

Directions: Please make an X on the rating scale below at the point that represents your best judgment on the following criteria. Please place the X ON a specific point.



Sequence illogical or unstated, teacher is left to puzzle it out. Does not appear to have subjected material to any analysis to build an instructional design. Scope is uncertain, seems to contradict sequence. Little help unintentionally to teacher or children in organizing material.

Average in organization. Some help but teacher must supply much of organizational sequence. Scope somewhat limited, may be too narrow (or broad). Sequence is not detailed enough and may not have been tested with a range of children.

Excellent organization of scope and sequence. Conceptually developed based on a consistent theory; task analysis or other appropriate investigation has been done. Tested for appropriateness of recommended sequence.

III/Methodology

A. Does the author(s) and/or material suggest any methodological approach? ___ ___

B. Is the methodological approach, if suggested, specific to the mode of transaction? ___ ___

1. Does the mode of transaction (Check as many as appropriate)

a) Rely upon teacher-centric method (largely teacher directing?) ___ ___

b) Rely upon pupil-centric method (largely self-directing?) ___ ___

c) Require active participation by the students? ___ ___

d) Passive participation by the students? ___ ___

e) Combination of active and passive participation by the students? ___ ___

f) Direct students' attention to method of learning as well as the learning product? ___ ___

g) Provide for variation among students -- uses several approaches to method? ___ ___

C. Does the methodology suggested require extensive preparation by the teacher? ___ ___

1. How much deviation is permitted in methodology?

Much ___ Some ___ Little ___

2. Does the methodology require unusual skills obtained through specific training? ___ ___

3. Is there any statement on how methodology was tested: any experimental evidence? ___ ___

4. If you have tried the recommended methodology, how successful did it seem for your students?

Most succeeded ___ Approx. half succeeded ___

Few succeeded ___

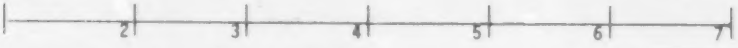
a) Please provide a brief description of the students who were successful and those who were not successful.

b) What variations on recommended methodology have you used?

D. In a brief statement describe the recommended methodology.

E. Quantitative rating: methodology.

Directions: Please make an X on the rating scale below at the point that represents your best judgment on the following criteria. Please place the X ON a specific point.



Very little help is given on methodology, or methodology is too abstract and complex for most students and teachers. Methdology appears to be unrelated to content and an afterthought in the learning package. Too active or passive for most students. Teacher required to participate fully with too many students at every step. Doesn't have appropriate methodology for variety of learning ability among students.

Gives help to the teacher, but would like more. Some students would be able to cope with suggested methodology, but others not. Doesn't appear to have been widely field tested. Teacher has to work out variety for students with special learning difficulties.

Uses a variety of modes in the transactions. Does not chain a teacher to a mode without reason, but provides assistance for different abilities. Describes the field test of the methodology. Teachers will find methodology easy to use and believe students will respond. Methodology is part of goals of instruction and not just vehicle for content.

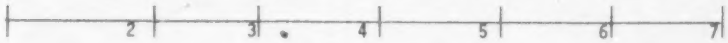
00071

IV/Evaluation

	Yes	No
A. Are there recommended evaluation procedures for teachers and students in the instructional package?	___	___
1. What do the evaluation procedures emphasize? (Check as many as appropriate)		
a) Cognitive skills ___ b) Subject skills ___		
c) Psychomotor skills ___ d) Affective responses ___		
2. Are the evaluation procedures compatible with the objectives?	___	___
3. Are evaluation procedures developed for several different levels: (Check as many as appropriate)		
a) Immediate feedback evaluation for the pupil ___		
b) Evaluation for a variety of the areas in 1. above, and over a period of time ___		
c) Immediate feedback evaluation for the teacher ___		
d) Evaluation on a norm referent ___		
e) Evaluation on a criterion referent ___		
B. Are the evaluation procedures contained in the package?	___	___
C. Does the evaluation give attention to both product and process learning?		
D. Is there information on how evaluation procedures were tested and developed?	___	___
E. Briefly state what evaluation procedures are included. If possible give examples.		

F. Quantitative rating: evaluation

Directions: Please make an X on the rating scale below at the point that represents your best judgment on the following criteria. Place the X ON a specific point.



Haphazard in approach. Product and process learning either entirely neglected or confused. Lists items, but poorly constructed, no evidence of testing of evaluation approach. Students receive no assistance through feedback. Fails to recognize and examine different types of learning where appropriate.

Some examples given, range of evaluation limited. Samples given but limited and sketchy. Teacher finds useful that which is given, but needs more examples. Evaluation is limited to product or process. Unsure on whether evaluation has ever been tested, but seems logical though limited in types of learning examples.

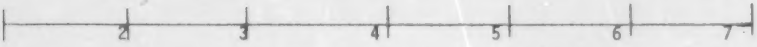
Many suggestions and helps in evaluation for the teacher. Has criterion reference procedures where appropriate. Student obtains assistance in learning through feedback evaluation. Gives attention to several kinds of learning, consistent with objectives of learning package.

V/Comment

A. Draw up an overall statement of the strengths and weaknesses of the material as an instructional package. Prepare your statement as if it were to be addressed to your fellow classroom teachers who are going to use it to make a decision on these instructional materials.

B. Quantitative rating: overall assessment of material.

Directions: Please place an X on the point in the rating scale which best represents your overall judgment of these materials. Place the X ON the specific point.



Poorly designed, conceptually weak and inconsistent or haphazard design. Does not appear to have been field tested: inaccurate assumptions about children who will be using material. Overpriced, underdeveloped, a bad bargain.

Has strengths and weaknesses, but most teachers would find satisfactory. On the balance comes out about average, would need considerable supplementary effort by teacher. A compromise of price and availability.

Excellent, one of the best by comparison with other available material. Theoretically strong and carefully field tested. Shows consistent instructional design. Would recommend highly; well worth the price.

SCHEME 4: The St. Gallen Scheme

A 'Criteria Catalogue' for Inspection-Evaluation of Curriculum Materials for Primary School Mathematics, published in Schweizer Lehrerzeitung 49/7. Dec. 1972, by E. Hengartner and H. Weinrebe.

1. Media (elements) of the curriculum

1.1 Which individual media or elements belong to the text (inventory)?

1.2 Which special characteristics do the individual media or elements possess (description)?

1.3 What was the justification for the selection and the special characteristics of the media (function)?

2. Aims

2.1 Which general aims does the text pursue?

- which aims are explicitly stated?
- are there further not explicitly stated aims contained in the material (cf. method)?
- is there any weighting attached to the aims?
- are the individual aims compatible or are there conflicts?
- are the aims justified?
- what is the source?

2.2 Which subject-specific aims are followed by the text?

- which of the following subject-specific contents are to be found in the text: logic, sets, relations, arithmetic, geometry, algebra?
- how are the individual areas of content ordered (sequence)?
- what significance is given to each area (for example specific to the number of teaching units)?
- what is the sequential arrangement and weighting of the individual areas based upon (see 2.1)?
- list of sources.

2.3 Are the aims described?

- in what way are the aims described?
- to what areas are the aims related (the areas of thinking and language, affective, and social areas....)?
- on what level of complexity (with respect to learning processes) are the aims mostly stated?

3. Special pre-requisites of learning

(the prerequisites for individual activities are dealt with under 4.4)

3.1 Were various prerequisites for the children in respect of linguistic

00074

and cognitive behaviour taken into account as well as social behaviour (social class specific differentiation)?

3.2 Were specific problems of individual children taken into account: for example colour blindness, behaviour problems....etc.?

4. Method (the following criteria are intended as exemplars; they should help orientation)

4.1 Is the method explicitly described?

- where is it described and is it recognised as a hypothesis?
- what characteristics (or principles, rationale) identify the method?
- has the method got some justification - is there consistency with the general aims of materials?

4.2 On what principles are the materials 'content wise' developed (overall structure)?

- is there a linear structure or a development on the principle of the spiral curriculum?
- on what basis is the development of the material founded?

4.3 On which principles are the individual teaching units (or weekly plans, lessons) developed?

- is it possible to recognise definite principles of individualising and differentiating?
- what forms of differentiation are in the materials and how are they justified?
- were the materials planned to be taught in a linear manner rather than offering alternative paths?

4.4 The following criteria are related to the forms of activity such as games and exercises:

- how large is the proportion of activities which require reproductive rather than creative learning?
- are the kinds of problems in the exercises and games varied in different areas of content (process variation)?
- has the application of various media been considered (variation of media)?
- how great is the proportion of verbal and non-verbal activities?
- are the forms of the verbalisation and symbolisation fixed or flexible?
- what are their prerequisites for learning and how are these assumptions justified?
- are possible difficulties in connection with individual games and exercises described and is the teacher given instructions to diagnose

00075

them and give help?

- do the forms of activity accord with the aims and the proposed methods?

4.5 In the description of the activities, are certain social forms of teaching proposed and are the recommendations given some justification?

- how large is the proportion of various interaction forms? (Class teaching, group and partner work, individual work) and how are they justified?

- are necessary pre-conditions of learning for specific forms of interaction mentioned?

- which principles are offered for group development and how are they justified?

- do the materials give guidance for rules of group work and for organisational questions relating to various forms of interaction?

- are special prerequisites for learning of individual children taken into account (for example difficulties with contact, aggression)?

4.6 How is the role of the teacher described in the materials, especially with regard to the functions (organising/guiding and learning process, adviser, diagnostician of learning difficulties, controller and evaluator etc.)? Any theoretical foundation?

- in the materials are there directions about the teacher's language (scope, form, etc.)? Justification?

- are group dynamic activities of the teacher explained and justified?

4.7 In the materials are technical-organisational questions discussed (e.g. directions about school organisation, questions of school and class changes etc.)?

5. Assessment

5.1 Do the materials give directions for assessing learning during teaching (informal control of learning)?

- if so, which principles are considered?

- what is the function of such assessment?

5.2 Do the materials contain special exercises for testing the success of the learning (formal control of learning)? Description?

- what is the function of this assessment? (Giving marks. diagnosis of learning difficulties etc.)?

- what is the format of this assessment - is the assessment in accord with the explicit aims?

00076

6. Special information in the materials

6.1 Do the materials anywhere contain an overview
- to the overall structure of the materials?
- to the sequence of the individual units, such as weekly plans?
- about the aims to be achieved?
- about the media appropriate to the course?
- about the sequence (time-wise)?
- about the mathematical contents in the course (e.g. teacher notes)?
- about literature?

6.2 For each of the individual learning units is subject-specific and pedagogic information given?

6.3 Is there any information about the results of evaluation?

6.4 Is information noted as fact, hypothesis, or as normative decisions?

7. Cost and availability of the materials

7.1 What is the cost for minimal implementation in a class of a certain size?

7.2 Are individual elements available in the scope of the planning?

00077

SCHEME 5: Peter Häussler and June Pittman (1973)

A Curriculum Materials Analysis with Specific Application to Science*

1. Content

1.1 Behavioural Elements

What are the intended bheaviours included in the curriculum and what is the relative emphasis on the various behaviours?

1.1.1. acquiring knowledge

1.1.2. acquiring inquiry skills

1.1.3. acquiring manual skills

1.1.4. acquiring an orientation to science

1.1.5. displaying cooperative behaviour

1.1.6. acquiring self-directional behaviour

1.2 Subject Matter elements

1.2.1. What is the subject matter included in the curriculum and what is the relative emphasis on various areas?

1.3 General elements

1.3.1. What emphasis is given to the acquisition of knowledge as compared to inquiry behaviours in any one instructional unit?

1.3.2. What emphasis is given to stating relationships quantitatively?

1.3.3. What are the major organizing structures for the content of curriculum (subject matter and/or behavioural elements?)

1.3.4. What principles are used to coordinate and integrate the various science disciplines?

2. Instructional Methods

2.1 What degree and kinds of direction are given to the student so that he can perform in the instructional unit?

2.2 What pattern of grouping is employed in the instructional unit?

2.3 Do groups operate cooperatively or in isolation in the instructional unit?

2.4 What kinds of media are used in the instructional unit?

2.5 What devices, other than the science content are included in the student material to stimulate attention?

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* This list gives only the prime components of the analysis system. The fully elaborated version is published by Institut für die Pädagogik der Naturwissenschaften an der Christian-Albrechts-Universität Kiel, Olshausenstrasse 40 - 60, 2300 Kiel, Germany. Some discussion of this elaboration is included in the paper and some examples are given in Appendix C.

00078

2.6 To what degree are the learning objects common to everyday life?

2.7 What modes of representation are used in the instructional unit?

2.8 Is inductive or deductive reasoning emphasised in the instructional unit?

3. Adaptiveness

3.1 How varied is the curriculum in its approach to the -

3.1.1. grouping used

3.1.2. amount of direction given

3.1.3. media used

3.1.4. devices of stimulating attention used

3.1.5. modes of representation used

3.1.6. reasoning style used

3.2 How adaptable is the curriculum to an individual student's learning rate?

3.3 How adaptable is the curriculum to an individual student's pre-instructional repertoire?

3.4 How adaptable is the curriculum to an individual student's interest?

3.5 How adaptable is the curriculum to an individual student's preferred learning style?

3.6 How adaptable is the curriculum to an individual teacher's style?

4. Effectiveness

4.1 On what level of specification are the objectives of the curriculum stated?

4.2 What kind of tests are provided to evaluate the attainment of the objectives of the curriculum?

4.3 What kinds of evaluation studies were carried out during field testing of the curriculum and with what results?

5. Administration

5.1 To what degree is the curriculum self-contained?

5.2 How demanding is the curriculum in terms of teacher preparation time?

5.3 What kind and how much teacher training is provided by the curriculum developers?

5.4 What special facilities are required to operate the curriculum?

5.5 What does it cost to operate the curriculum per student per year?

00079

SCHEME 6: Swedish National Board of Education (Nyström 1974)

Learning Material Declaration for Grade 7 Mathematics

1. Product Assessment

1.1.(R) Assessment of Goal Congruence with the National Curricular Guidelines (the "Läroplan")

1.1.1. Goals and guidelines in the curriculum

"Does this learning material cater, through its selection of subject matter and its work procedure, for such general, overall curricular aims as critical evaluation, independence and creativity?"

1.1.2. Questions on non subject-specific areas of content such as international issues, issues concerning sex roles.

1.1.3. Agreement of the content of the learning material with the goals and main items of the subject.

1.2.(R) Assessment of accuracy (objectivity)

1.3(T,P) Assessment of learning material in operation

Tables summarizing the responses of teachers on 5-point scales to the following statements.

1.3.1. The learning material as a whole

"The learning material contributes towards the attainment of the goal of the subject".

1.3.2. Teacher's guide

"The suggestions regarding pedagogical disposition in the teacher's guide are practically workable".

"The timing proposed by the teacher's guide is practically workable".

1.3.3. Material for the pupils

"The material relates to topical phenomena at home, at school and in working life".

"The material satisfies your requirements concerning technical design (size of print, layout etc.)".

"The material is adjusted to suit low performers".

"The material is adjusted to suit normal performers".

"The material is adjusted to suit high performers".

Additional tables for this sub-section summarise the responses of 75 pupils on 2-point scales to the following statements.

"The examples often refer to things I know about".

"The materials are nice/dull"

"The materials are easy/hard to read".

"The examples are usually not too difficult and not too easy/ too difficult".

"There are usually enough examples/often no examples".

1.4(R,T,P) Assessments

Would you choose it again? (T)

5-point scales for pupils in reply to the questions (P):

"What do you think of the material you use in mathematics?"

"How do you like doing mathematics?"

An open-ended invitation to list merits and demerits (R,T)

1.5 Formative Evaluation

Brief description and summary table on what was done.

(No data given but published reports referred to.)

2. Product description (completed by producers)

(2.1 Teacher material
(2.2 Pupil Material

Tabulated information headed as follows

Component	Edition year	Format Size Number	Price	Use*	Remarks

*Marked A for necessary, B for desirable, or C for supplementary

2.3 Content description

Legend:

● exhaustive - very much so

○ brief - to a certain extent

Blank square - not at all

2.3.1. Planning

	Teacher material	Pupil material
Planning covering		
. Level	●	
. Grade	●	
. Section	●	
The learning material offers no suggestions regarding timetable solutions or coorindation with other subjects.		

2.3.2 Goal description

	Teacher material	Pupil material
Goal description regarding Knowledge and skills	●	

00081

2.3.3. Pedagogical disposition

	Teacher material	Pupil material
. Division into basic and advanced course		●
. Arrangements for low performers	0	
. Revision instructions depending on answers to diagnostic tests	0	
. Self-instructional design.		0
. Reasons given for studying sections of the subject		
. Reference to current problems at home, at work and in society at large		●
. Instructions for cooperation between the pupils	0	
The learning material contains no special arrangements for high performers.		

2.3.4. Supplementary particulars

(R) Indicates reviewers' opinions
(T) Indicates teachers' opinions
(P) Indicates pupils' opinions

Taken from the publication "Learning Material Declarations - a model development", by Astrid Nyström, Learning Aids Development Section, National Board of Education, Stockholm, 1974.

SCHEME 7: The Sussex Scheme

This scheme is explained in Chapter 4 and reproduced in full on pages 103 - 108. So only a brief outline is included here.

Part 1	INTRODUCTION
1.1	Basic Facts
1.2	Author's Rationale
1.3	Issues and Perspectives
Part 2	DESCRIPTION AND ANALYSIS OF THE MATERIALS
2.1	Description of Pupil Materials
2.2	Description of Teacher Materials
2.3	Structure of the Materials
Part 3	THE MATERIALS IN USE
3.1	Main Features
3.2	Possible Modifications and Additions
3.3	Patterns of use
3.4	Implications for Implementation
Part 4	EVALUATION
4.1	Other Sources of Evidence
4.2	Evaluation of Aims
4.3	Evaluation of Curriculum Strategy
4.4	Evaluation of Materials
4.5	Suitability for the Context
Part 5 (optional)	DECISION MAKING IN A SPECIFIC CONTEXT
5.1	Constraints of the Particular Context
5.2	Possible Patterns of Use
5.3	Implementation Strategies
5.4	Summary of Decision Issues

00083

APPENDIX A

Product Description Scheme used by American Institutes for Research

This scheme was used as a basis for the first section of each of a series of 21 Product Development Studies*, dealing with the developmental history of recent educational products. The studies are primarily focussed on the development and diffusion process, so the sections subsequent to Product Description are Origins, Product Development, Summative Evaluation, Diffusion, Adoption and Future of the Product.

Product Characteristics (less than 1 page)

Name
Developer
Distributor
Focus
Grade Level
Target Population

Rationale for Product (1 - 6 pages)

Long Range Goals of Product
Objectives of Product
Philosophy and Theories supporting product

Description of Materials (1 - 8 pages)

Organization and Format of Materials
Content of Materials
Cost of Materials to User

Procedures for Using Product (2 - 9 pages)

Learner Activities
Teacher Activities
Provision for Parent/Community Involvement
Special Physical Facilities or Equipment
Recommended Assessment Techniques for Users

* These studies, published between December 1971 to March 1972, are available from American Institutes for Research.

APPENDIX B
Excerpt from an analysis of the kit "Decisions" (Colthurst, 1971)

Profile of Student Task Descriptors

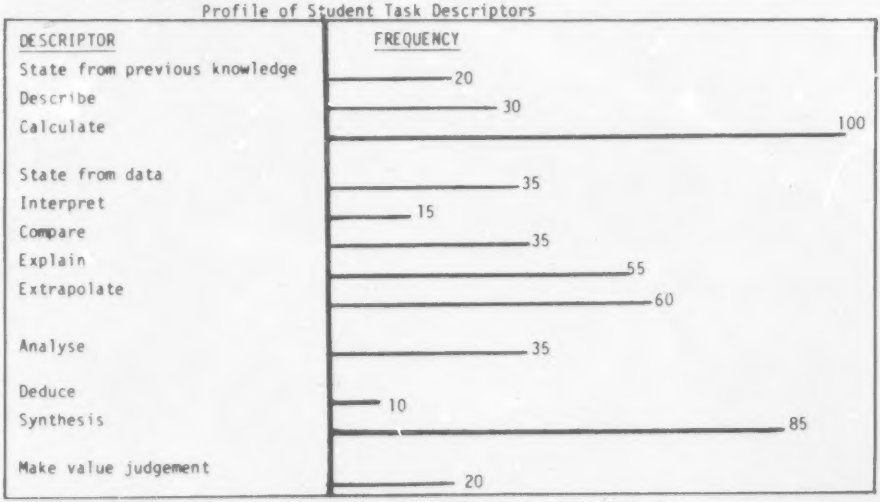

Table showing distribution of tasks between units:

DESCRIPTOR	CURRICULUM UNITS				
	1	2	3	4	5
State from previous knowledge	20				
Describe		15		15	
Calculate	30		70		
State from data				35	
Interpret		15			
Compare		5		20	10
Explain	15	25		15	
Extrapolate	15				45
Analyse	15	20			
Deduce			10		
Synthesis	5	20	20	15	25
Make value judgement					20

Measurement is shown in relative terms, the amount of time that might be assumed to be involved, as a proportion of the total time for tasks.

In several cases more than one descriptor has been given to each assignable task.

00085

APPENDIX C

Excerpt from list of content key words (Häusler and Pittman, 1973)

352	Absorption
303	acceleration
353	acoustics, sound
020	active transport through membrane
226	acid, base
029	absorption
073	ageing, death
511	air masses
702	algebra
211	alloy, solid solution
369	alternating current, resistance in regard to alternating current
062	amino acids
367	amperage
235	analysis, qualitative and quantitative
037	anatomy, animal
051	anatomy, plants, general
320	angular momentum
037	animal anatomy
095	animal classification
011	animal physiology, general (discussion of processes)
067	animals, reproduction, asexual
068	animals, reproduction, sexual
306	area, volume, distance, length
700	arithmetic
067	asexual reproduction of animals
069	asexual reproduction of plants
514	atmosphere - earth's
379	atom
200	atoms, elements
604	axis
048	balance, rotation
324	balance (the instrument)
226	base, acid
201	basic matter - kinds of
010	behavior
003	biomes (tundra, deserts etc.)
101	biotechnique
014	blood
080	body fluids
013	body fluids (circulation of)
205	bonding, chemical
232	burning, combustion, fire, flame
104	calculus
023	carbohydrates
229	catalysis
038	cells
055	cell walls
362	charge (electrical)

00086

APPENDIX D

Examples of numerically coded questions (Häussler-Pittman, 1973)

Columns 22 - 44	B e h a v i o r a l E l e m e n t s o f C o n t e n t
Column 22	The student gains knowledge of s[illegible]ific facts or The student gains knowledge of conventions 0 = no 1 = yes
Column 23	The student gains knowledge of scientific terminology 0 = no 1 = yes
Column 24	The student gains knowledge of concepts of science 0 = no 1 = yes
Column 25	The student gains knowledge of classifications categories and criteria 0 = no 1 = yes
Column 26	The student gains knowledge of information sources 0 = no 1 = yes
Column 27	The student gains knowledge of scientific techniques or procedures 0 = no 1 = yes

00087

Columns 51 - 52 General elements of content

Column 51 Relative knowledge - inquiry emphasis

0 = can't judge
1 = the main emphasis on acquisition of knowledge
2 = the acquisition of knowledge and inquiry behaviors are both emphasised
3 = the main emphasis on inquiry behaviors

Column 52 Quantitativeness of relationships

0 = not applicable
1 = mathematically quantitative
2 = comparatively quantitative
3 = qualitative

Columns 53 - 65 Instructional methods

Column 53 Degree of student direction

0 = can't determine
1 = the student receives complete directions on how to perform in the instructional unit
2 = the student has some opportunity to organise the instructional unit in his own way
3 = the student is autonomous: he is completely free to organise the instructional unit in his own way

Column 54 Source of student direction

0 = can't determine
1 = directions are given primarily by teacher
2 = directions are given primarily by student material
3 = directions are given by teacher and student material with about equal emphasis
4 = directions are formulated by the students themselves

CHAPTER 4: INTRODUCTION AND GUIDE TO THE SUSSEX SCHEME

Scope and Purpose of the Scheme

The purpose of the analysis scheme outlined in this chapter is to provide guidance for the analysis of a textbook or curriculum package which has a major effect on the rationale of the curriculum area concerned. For those who are considering the purchase and use of the materials, the analysis is intended to provide evidence which will guide the decision to adopt, adapt or reject them. For those who are already using the materials, the analysis is a review which might lead to a better understanding and a change in the manner of their use. Two situations are envisaged:

1) A situation where one or more potential users conducts the analysis on his own account or on behalf of a group of fellow-teachers.
2) A situation where an experienced analyst conducts the analysis on behalf of several groups of teachers, who will probably work in differing contexts and have differing values.

In either case the purpose of the analysis is to present the evidence and not to prejudge the decision.

It should also be mentioned that, while this particular scheme is designed for the analysis of curricula which are based on published materials, e.g. curriculum packages and textbooks, work is also in progress on the problems of analysing curricula which are not materials-based. However, even this scheme for materials analysis is designed to take into account contextual factors and the degree to which curriculum decisions pre-empted by the adoption of particular materials are likely to be changed or supplemented in the process of implementation.

The Analyst, his Training and his Audience

The scheme may be used at a number of different levels according to whether one restricts its scope to issues of practical and immediate importance or attempts to ask much more fundamental questions about the rationale and assumptions upon which the materials appear to have been based. In its more restricted form the analysis can usefully take about a week to complete provided that the analyst has already got some

00089

familiarity with the materials. Although it can be an advantage for him to have used the materials it is not essential; and the analyst is frequently in the position of being interested in examining new materials rather than those already in use. It is however necessary for the analyst to have attended a training course of at least 30 hours duration, most of his training time being taken up by guided practice (cf. Chapter 5). A more penetrating analysis could take up to a month to complete and requires subject expertise, practical teaching experience and a considerable understanding of educational theory in addition to attendance at a special training course.

A further issue concerns the analyst's relationship with his potential audience. The form of the analysis is well suited to documentation of the materials and to providing evidence for judging them in a clear logical manner; but it is not necessarily appropriate for communicating the critical issues to an audience which wants a simple brief rather than a lengthy technical document. In such situations the analyst will still need the scheme to gain command of his material but will have to find a different form for the subsequent presentation of his conclusions (cf. Chapter 1). In essence the scheme provides a map which serves two complementary functions; it allows the analyst to explore the materials, taking the sections in the order which he finds most appropriate and revisiting them when necessary; and it helps him to describe where he has been and to summarise the issues and the evidence that he considers most likely to concern his readers.

The Structure of the Scheme

The scheme is divided into five parts, with the fifth part being optional.

1. Introduction.
2. Description and Analysis of Materials.
3. The Materials in Use.
4. Evaluation.
5. Decision Making in a Specific Context.

When the analysis is being conducted to inform a decision-making group in a specific context, the fifth part should probably be completed. But if the analyst has several different user groups in mind he should leave the final part for possible completion by them at a later date.

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The Introduction (Part 1) gives the basic facts about the materials, their nature, cost, aim, function and audience; summarises the author's rationale, if he gives one; and lists the main issues and perspectives which emerge from the analysis. Part 2 then describes and analyses the content, presentation and structure of the materials, giving special attention to indications of purpose and to the forms of interaction which are envisaged between teacher, pupils and materials. Part 3 on 'The Materials in Use' then looks at the main features of the materials, summarising the curriculum decisions that would necessarily be involved in their adoption and assessing the scope or need for modifications or additions. This leads to an examination of some different patterns of use and likely problems of implementation.

The Evaluation (Part 4) first provides an opportunity for the analyst to summarise any available external evidence, whether it comes from published reviews and evaluations or from colleagues who have used the materials. Then it examines in turn the aims, the intended curriculum strategy and the detail of the materials, in order to show where the materials 'stand' on each of a range of issues of professional concern. This provides a convenient way of grouping arguments for and against the materials without seeking to prejudge decisions which rightly belong to the subsequent decision-makers. Issues debated amongst practising teachers, subject specialists and educationalists are all considered relevant. Part 4 then concludes with a discussion of the suitability of the material for use in various contexts. The fifth part focuses the evaluation on a specific decision in a specific context by considering constraints, patterns of use and implementation strategies; and by summarising the decision issues for that particular situation.

PART 1. INTRODUCTION

1.1 Basic Facts
1.2 Author's Rationale
1.3 Issues and Perspectives

Part 1 is only an introduction and should be kept as brief as possible, though not at the expense of omitting significant points. It is intended to orientate the reader and should ensure that he enters the analysis with an appropriate and balanced perspective. The analyst should not forget that all the points will be expanded upon later in the analysis.

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The first section, 1.1, should be restricted to one or two pages and should not contain much more information than is to be found in the average publisher's brochure.

Section 1.2 will often have to be omitted as an author's rationale is by no means a standard feature. Sometimes it will be necessary to refer to other publications, particularly when the author has also written a 'methods' text. But it is essential to include only statements that can be properly attributed to the author. Inferred explanations or justifications are better left to Part 4 where arguments in favour of the materials form an important part of the evaluation. There are also cases where the author's statements of intent bear little resemblance to what he actually did. This can be immediately taken up in Section 1.3, which among other things has the function of preventing the reader from starting the analysis with an unnecessarily author-dominated perspective. In general, section 1.2 should concentrate on any indications the author might have given as to why the materials might be needed, why he selected a particular teaching strategy and why he designed the materials in that particular form. How has he diagnosed the problem? (Or the market?) What is his strategy for tackling it and how does he explain or justify that strategy?

Although section 1.3 should be tackled in draft form at the beginning of the analysis, it should not be finally completed until the very end. Its purpose is to summarise the main issues raised by the analysis and it serves as a useful guide to the intending reader. It is useful for the analyst to attempt it early on as it gives direction to Part 2, the Description and Analysis of the Materials. But new issues emerge as the analyst is at work; and he is not usually in a position to grasp and summarise the issues in a manner which gives some indication of their relative importance until he has finished Part 4.

PART 2. DESCRIPTION AND ANALYSIS OF THE MATERIALS

2.1 Description of Pupil Materials*

2.2 Description of Teacher Materials

2.3 Structure of the Materials

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* We have used the term 'pupil' throughout the scheme, but suggest that the term 'student' be substituted whenever it is more appropriate, i.e. for pupils over 18 (or over 14?)

The purpose of Part 2 is to describe the materials and infer their structure. It is the one part of the scheme whose usefulness has sometimes been questioned on the grounds that potential users should inspect the materials themselves after which they would no longer need to read a description. We would always urge such an inspection, though it is not always convenient or even possible. But in our experience prior inspection has not made the description and analysis redundant, merely easier to read. In addition to providing essential evidence on which the rest of the analysis is based, Part 2 develops an awareness and understanding of the materials that is seldom gained from informal reading and study, or even from use. The approach is far more analytic than a normal prolonged inspection. It brings together in one place features, such as statements of purpose, implied teacher roles or advice on assessment, which are often found scattered and uncoordinated; and it makes a much more deliberate attempt to elucidate the structuring of the content and the sequencing of the pupil's tasks. Since it is quite usual to provide only pupil materials or only teacher materials, either 2.1 or 2.2. will be frequently omitted.

Section 2.1 should include materials such as slides or overhead projector transparencies, which are presented by the teacher to the pupil, as well as materials to which pupils have personal access. Teacher material included within the pupils' books should also be dealt with in this section as it contributes to the pupil's view of 'what it is all about'. Where there is more than one major resource it is usually best to take them together through each of sub-sections 2.1 to 2.7 rather than take them consecutively.

The chief problem in 2.1 and to a lesser extent in 2.2 is achieving the right balance between quantitative and qualitative information. Quantitative information is necessary for indicating the relative emphasis given to different aspects of the subject matter or to different types of presentation; and this applies both for the materials as a whole and for the content pattern within each individual chapter. The usefulness of this quantitative information will however, be largely determined by the ability of the analyst to find suitable descriptors or categories for identifying important features of the content, presentation form, pupil exercises and assessment pattern. A careful selection of sample chapters can limit the amount of time involved; and it is also advisable for the analyst to check that the categories he intends to use in Part 2 are

00093

appropriate for the issues he wishes to discuss in Part 4 before embarking on any detailed quantitative work.

Purely quantitative analysis cannot however convey the flavour of the materials: this can only be done qualitatively. The categories chosen for quantitative analysis may need qualitative illustration either by direct quotation or by including photocopied extracts. This is particularly useful in 2.1.2. for indicating the general nature of the presentation in terms of language, visual style, etc. Another useful technique is the précis of a sample section or chapter: in 2.1.1. this can help communicate the flow of the content; and it is often useful in 2.1.2. as well. Many analysts prefer not to separate content from presentation and therefore combine 2.1.1. and 2.1.2.

A careful choice of categories and their exemplification by judicious quotation is also critical in sections 2.1.3. and 2.1.4. Then 2.1.5. and 2.1.6 are concerned with how the materials may develop pupil expectations about what and how they are supposed to learn, and with any attempt that the author may make to justify his decisions to the pupil. Relevant statements are often quite difficult to find when they are embedded in the general text rather than separated out into prefaces or chapter introductions.

Section 2.2. is very similar in structure to section 2.1. but can present problems of a rather different kind. Though teacher materials are often much shorter and easier to handle in terms of content and presentation, some features of their organisation can be almost haphazard. Statements of purpose, statements about content, teaching hints, suggestions for additional pupil activities and advice on assessments can be so intertwined that sub-sections 2.2.3. to 2.2.7. are quite difficult to disentangle. Nevertheless the sorting of advice to teachers into these categories helps to clarify the essentials of the curriculum strategy that is being advocated. Again direct quotations are often the best way to get the right connotation, especially when the author is contorting himself to steer a middle course between giving no advice at all and teaching his grandmother to suck eggs.

In moving to section 2.3. the analyst's function changes. He is no longer describing the content and style of the material more or less as it is presented, but is inferring its underlying structure. Working at this more abstract level requires a greater degree of judgement as

the structure is only sometimes described in teacher materials; and even then there may be some conflict between the structure described and that which might be inferred from a close examination of the pupils' materials.

Sub-section 2.3.1. gives the analyst the opportunity to point out any major points of conflict between the pupil materials and the teacher materials. While direct contradictions may be rare, differences in emphasis are quite common and can easily lead to misunderstanding. Differing impressions may be given as to the purpose of the materials, the balance and style of the pupil tasks may not confirm the claims of the teachers' manual and differing areas of content may be stressed. Many of these points will be treated more fully later in section 2.3. so sub-section 2.3.1. should merely set the scene. Where there are no pupil materials, no teacher materials or no obvious points of conflict this sub-section should be omitted.

2.3.2. examines the coverage of the subject matter and draws on material from sub-sections 2.1.1., 2.1.3., 2.2.1 and 2.2.3. It should however aim at a more general level than the earlier sections, and give special attention to the balance of emphasis between knowledge, skills and attitudes. Any explicit attempt to include values in the subject matter should also be noted. Then 2.3.3. takes up issues of depth rather than breadth, looking at the generality and the level of abstraction of the subject matter from a number of viewpoints. What is the balance between factual and conceptual material? What are the links between generalisation and examples, conclusion and evidence? Does it seek to develop general skills such as language skills, inquiry skills and social skills as well as specific subject skills like map-reading or equation-solving? Are the values emphasised specific or are they related to more general moral principles?

A question (2.3.4.) is now inserted to find what starting point the author has assumed before the analyst proceeds (in 2.3.5.) to see whether there is any cumulative build-up of skills or knowledge. Sub-section 2.3.5. is concerned with both structure and sequencing. How are the different topics linked together and are there any obvious reasons for the order in which they appear? Is a conceptual structure being developed?

Or a skill structure? Or a value system? Then 2.3.6. asks about the image of the subject matter. Is maths about 'sums' or history about 'Kings and Queens and dates'? Is humanities about controversial issues or our cultural heritage? Is science about experiment or getting the answer right? At a more sophisticated level there is the question of subject matter boundaries. Are they strong or weak, i.e. does the content move naturally into other subject areas where the topic demands it? Or are such topics carefully avoided? Is "common-sense knowledge" incorporated and developed or pointedly ignored? Can implicit values be deduced from the choice of topics or even from the choice of examples; e.g. stereotyping by associating certain activities with a particular class or occupation or sex; or selecting evidence which supports only one side of an argument?

Sub-sections 2.3.7. and 2.3.8. cover pupil tasks, teacher activities, assessment, and their relationship with the subject matter and with each other. In both questions the analyst is looking for changes in emphasis and possible reasons for them; for evidence of progression and for consistency between the author's decisions. Finally 2.3.9. examines the congruency of any stated objectives with pupil activites and assessment.

PART 3. THE MATERIALS IN USE

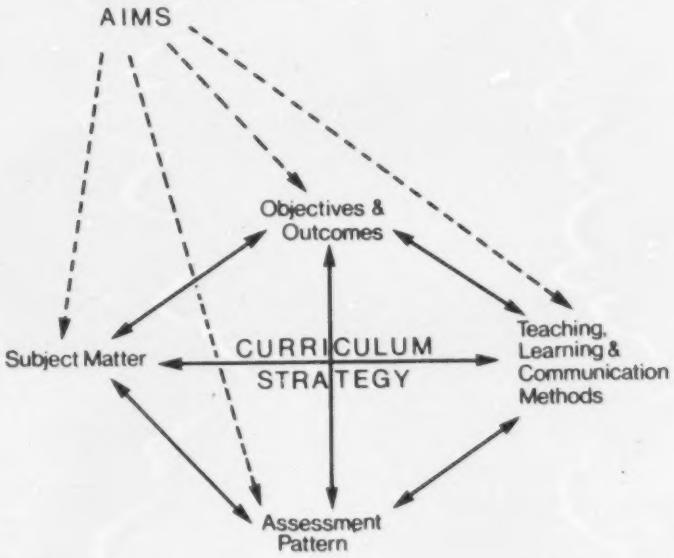
3.1 Main Features
3.2 Possible Modifications and Additions
3.3 Patterns of Use
3.4 Implications for Implementation

In Part 3 the emphasis gradually moves from the materials themselves to the schools which use them. Firstly there is a summary in section 3.1. of the main features of the materials, as these would have to be endorsed by all users; and then in section 3.2. the scope for modifications and additions and the need for further planning to fit local contexts is carefully examined. The patterns of use described in section 3.3. are seen to arise from some combination of the curriculum decisions involved in adopting the material (already outlined in 3.1. and 3.2.) with implementation decisions characteristic of typical school contexts (such as timing, grouping of pupils, articulation with the rest of the curriculum, assessment etc.) This leads naturally to section 3.4 which is solely concerned with questions of implementation.

00096

Section 3.1 has been left deliberately vague as a number of approaches are possible. But whether or not the curriculum model below is used, it is essential that the analyst indicates which major curriculum decisions would be pre-empted by a decision to adopt the materials and which would be left open. Most alterations listed in 3.2. would normally be within this pre-determined curriculum strategy; but it is also possible for the analyst to include adaptive alterations that contravene that strategy, if he thinks they will be characteristic of common patterns of use.

The authors prefer to use the simple curriculum model below to highlight the main curriculum decisions and indicate their interrelationships. This model assumes that it is possible to view any curriculum area in terms of a set of aims and a curriculum strategy for achieving those aims; and that the curriculum strategy can be reduced to four basic inter-related elements: subject matter, objectives and outcomes; teaching; learning and communication methods; and assessment pattern. Only the key decisions in each of these four areas should be included as too much detail can obscure the general strategy, especially the interrelationships between the elements.



00097

In using this model to complete section 3.1. we suggest that the analyst takes each element in turn and considers the advice offered below.

(a) Subject Matter - A very brief summary of sub-sections 2.3.2 to 2.3.6 is all that is required.

(b) Objectives and Outcomes - When, as is not uncommon, these are closely tied to the subject matter, it may be convenient to take (a) and (b) together. In either case the analyst should concentrate on those objectives which would necessarily be endorsed by the adopting school. These can be inferred from the pupil tasks analysed in Part 2 (cf. 2.1.3., 2.2.3., 2.3). Author statements of objectives (2.1.5, 2.2.5, 2.3.9) should not be ignored, but there is no need to accept them at face value. They are often incomplete and unreliable; and there is always a danger of confusing hopes with realistic expectations. The emphasis should be on the kinds of objective being endorsed, and a long list should always be avoided. Outcomes arising from attitudinal effects and from implicit values (2.3.6) should also be included if analysis of the materials indicates that they should be anticipated, even though they may not be endorsed as objectives. However in a curriculum where the outcomes are deliberately being left very open, the objectives will only be very general; and the analyst should not attempt to foreclose the options.

(c) Teaching, Learning and Communication Methods - A brief summary is needed of the pattern of planned interactions between teacher and pupil, pupil and pupil, and pupil and materials (cf. 2.1.2., 2.2.3, 2.2.6, and 2.2.7). Decisions about the language and medium of communication should also be included (cf. 2.1.2). It is important to note to what extent the teaching strategy has been comprehensively preplanned or left entirely to the individual teacher's discretion.

(d) Assessment pattern - (cf. 2.1.4, 2.2.4, 2.3.8). This should include diagnostic and informal assessment by the teacher as well as 'end of course' assessment, if it exists; and special attention should also be given to assessment cues which the pupil may pick up from the material or from his teacher. Though this does not mean that the analyst should be unduly speculative.

Whether or not the above curriculum model has been used, the analyst should conclude section 3.1 with a brief summary of the aims that would be endorsed by adoption of the materials. These should be sufficiently general to allow the possibility of alternative curriculum strategies

00098

and alternative types of material, but not so general that they could be said to apply to all the common curriculum strategies in that particular area. Such platitudes would indicate none of the distinctiveness of the materials under analysis. Again the emphasis should be on inferring aims from the descriptive analysis in Part 2; and the author's stated aims should only be cited where there is corroborative evidence. This is also the best place to note any conflicts between the curriculum decisions outlined above, relating them where possible to conflicting aims or conflicting priorities over aims.

The same curriculum model can be used in Section 3.2 as a convenient way of assessing the scope for modification or expansion of the aims or curriculum strategy. Such alterations will not necessarily involve materials, as additional content can be introduced by the teacher or by project work as well as through pupil materials; and modified objectives might be sought through a different pattern of teaching. However, the analyst should not devote much time to discussing alterations which do not relate either to the patterns of use described in section 3.3 or to remedying criticisms included in Part 4. The scope and need for supplementary materials within the curriculum strategy outlined in Section 3.1. should also be assessed.

Thus far we have assumed that there is a distinguishable curriculum strategy which would be endorsed by adoption of the materials. Sometimes, particularly in the traditional textbooks, the number of pre-empted curriculum decisions is so small that the term 'curriculum strategy' is hardly appropriate. In such cases one would have to consider whether the use of a relatively complex analytic scheme was worthwhile. Where there is a sufficient set of curriculum assumptions to justify this type of analysis but the curriculum strategy is still fairly sketchy, the analyst should clearly state which major curriculum decisions still need to be taken and what further planning will need to be done. This is also important where there is a clear overall strategy but a lot of curriculum planning still needs to be done by the user group prior to implementation.

Section 3.3., which outlines possible patterns of use for the materials, is the hub of the whole scheme. Hitherto we have concentrated on the materials, their underlying structure (2.3), the curriculum

00099

decisions they pre-empt (3.1), and the scope or need for modification (3.2). But now it is the user group which moves to the centre of attention, and specific proposals are being set out for their consideration. Each 'pattern of use' is essentially a proposal to use the materials in a particular way with a particular group of pupils in a particular curriculum context. Clearly the main details of each proposal would need to be left for Part 5, but it is at least possible to differentiate alternative patterns of use and outline their salient characteristics. Only then is it possible to examine the implications for implementation (3.4) and to proceed to an evaluation (Part 4) which is not totally divorced from practical issues.

The patterns of use selected should satisfy one of three conditions: they should be known to exist; they should be considered likely to exist; or they should be of special interest to the analyst and the user groups he has in mind. Often it is convenient to start with the pattern(s) most likely to have been envisaged by the author, then to proceed to other patterns which endorse all the pre-empted decisions. Adaptations which significantly change one or more pre-empted decisions should only be included if they are likely to have special appeal to user groups. There is, however, no obligation on the analyst to outline more than one pattern of use: the scheme is flexible enough to allow several but the number actually included should depend primarily on the intended readership. It may be convenient to find a short title for each pattern as this facilitates reference to them in Part 4.

If the materials are to be used to prepare pupils for externally-set public examinations, their appropriateness for this purpose will need to be evaluated; and so will the aims of the examination. This is most easily achieved by preparing a special 'Examination Appendix' in which the prescribed syllabus, sample papers and relevant evidence from the examiners' reports are described and analysed.

Section 3.4 on implementation does not need any further elaboration. It should, however, maintain a certain level of generality so as to remain relevant to several possible implementation contexts. Issues specific to a particular school should be left for Part 5.

PART 4. EVALUATION

4.1 Other sources of evidence
4.2 Evaluation of aims
4.3 Evaluation of curriculum strategy
4.4 Evaluation of materials
4.5 Suitability for the context

Section 4.1 gives the analyst an opportunity to summarise and comment on available external evidence from trials of the materials, user reports and published reviews and criticisms. It may also suggest points which need further discussion in the later sections. Its length will vary with the extent of the evidence and the time available for tracking it down, and sometimes the section will have to be omitted altogether.

4.1.1. is concerned with the tryout of the materials, and with the use of such information for improving them. Though it obviously fits the formally organised curriculum project, it is also relevant to many textbooks which have been gradually developed by their authors over a period of time, usually starting in the form of worksheets or lesson notes. 4.1.2 refers to the effects of the materials in their published form or in pre-publication versions and is likely to be confined to formal evaluation studies, if there have been any. But sub-section 4.1.3 is concerned largely with informal evidence which the analyst has already gathered or might wish to gather from users. 4.1.4 refers to reviews and, where there is a lot of published criticism, it may be helpful to cross-reference the main evaluation points with those discussed in the later sections of Part 4. 4.1.5. is a summary of one particular aspect of the previous evidence, the detection of unintended outcomes, and is included because this particular aspect of evaluation is so often neglected. 4.1.6 gives the analyst an opportunity to present evidence on the effects of rival or related materials; and 4.1.7 gives him a chance to comment on the evaluation evidence in general, perhaps correcting any false impressions that he thinks might result from a brief examination by an uncritical reader.

The rest of Part 4 is very loosely structured because there are many possible ways of classifying evaluative points. Some categories are more appropriate to materials of one kind and some to another; and different issues will be emphasised by different groups. For example practising teachers, subject specialists and educationalists will tend to raise different points. We have tried to combine some of these

00101

different viewpoints in the checklists which accompany each section below. But these checklists should be treated by the analyst as "starter kits" from which to develop his own list of issues rather than as "complete packages". This list of issues should first be compiled when the analyst does his early version of Part 1; and then revised and classified under the headings Aims (4.2), Curriculum Strategy (4.3), Materials (4.4) and Suitability (4.5) when the analyst comes to Part 4.

In section 4.2 the analyst is asked to give arguments for and against pursuing the particular aims endorsed by using the materials, and to relate this discussion to potentially competing aims and to various forms of traditional practice. Our recommendation is to start with the patterns of use outlined in section 3.3 because these identify the curriculum areas concerned and their articulation with the rest of the school curriculum. The analyst then asks himself what alternative approaches might occupy these curriculum areas and what aims would be associated with them. This enables the discussion to be based on the arguments for and against several approaches and not just the one underlying the materials being analysed. If one omits arguments in favour of competing approaches, it is still possible to see what will be gained by using the materials but it becomes very difficult to see what will be lost.

In presenting these arguments it is useful to distinguish between arguments arising from the author's rationale and other arguments in favour of the materials; and when some patterns of use involve altering the aims, there will be arguments which favour the modified aims over the authors' aims and vice versa. Our 'starter checklist' of issues for consideration in preparing section 4.2 is given below. Many of the points are overlapping and do not necessarily need separate treatment.

> How does the rationale for this approach compare with those of alternative approaches commonly found in schools?
> How does the approach to this 'part curriculum' articulate with differing approaches to the 'whole curriculum'? How does it articulate with different school examination policies and streaming/setting/banding policies?
> Is an inter-disciplinary or multi-disciplinary approach being adopted or rejected and if so, why?
> What aims are being either explicitly or implicitly adopted or rejected by (a) the treatment of subject matter (b) the general

00102

pedagogic approach (c) the nature of the assessment?
To what extent are the materials relevant to vocational needs, to education for citizenship and changing social demands, or to pupil interests?
To what extent do the materials contribute to the personal development of pupils in terms of arousing new interests, promoting autonomous decision-making, developing standards of judgement, contributing to socio-emotional development, encouraging creativity, etc.?

The discussion now moves on from aims to possible curriculum strategies for achieving the aims. In Section 4.3 the aims of this 'part-curriculum' are taken as given, and the analyst proceeds as if the discussion in 4.2 had been resolved in favour of the materials. From this standpoint he has to consider both the curriculum strategies identified in Section 3.3 and possible alternative strategies for achieving the same aims. These alternatives may be derived from current practise in schools or from criticisms of current practise; and may differ from that assumed or advocated by the author in one or more aspects. So the analyst may wish either to take the adopted strategy and examine possible modifications, perhaps considering in turn each of the four elements of our curriculum model (Subject Matter, Objectives and Outcomes, Teaching Learning and Communication Methods, Assessment Pattern); or else to outline radically different alternatives and use these as the aims for his discussion. Our 'starter checklist' of issues for consideration in preparing Section 4.3 is given below. Some are overlapping and some are only relevant to particular curriculum areas. Some may have been at least partially discussed in Section 4.2 and unnecessary repetition should be avoided.

How does the curriculum strategy compare with existing strategies commonly found in schools? What practical and theoretical arguments can be used to justify or criticise the differences?
Is the curriculum strategy consistent with the aims, and are the main curriculum decisions consistent with each other?
How does the selection and treatment of the subject matter fit in with the range of professional views?
Is the image of the subject matter being communicated appropriate for the aims?
Is the subject matter strongly or weakly bounded with respect to (a) other fields of enquiry (b) common sense knowledge?
In what ways, if at all, is subject methodology being developed?
To what extent are the methods of inquiry, forms of evidence and types of justification representative of the fields of study?
If there has been an uneven selection, what appears to be the reason for it?
How are controversial issues treated? Are specific value positions (a) assumed (b) recommended (c) criticized (d) put up for discussion or (e) mentioned without comment?

00103

Is the curriculum strategy consistent with theories of child development? How do the teaching, learning and communication methods fit various pedagogic theories and common pedagogic practises?
Are the media of communication appropriate?
Is the language appropriate?
Are the pupil activities sufficiently varied, and adaptable to individual needs and preferences?
What possibility do the materials offer for (a) independent study (b) group study (c) revision (d) remedial work (e) enrichment?
What is the likelihood of reasonable success for a large proportion of pupils?
What opportunities or difficulties are there in using the materials in classrooms where particular approaches to assessment exist?
Is there sufficient provision for feedback to the pupil on his performance?
How appropriate is the curriculum strategy for specific examination purposes?

In Section 4.4 the analyst finally turns his attention to the materials themselves and their adequacy for their assigned purpose. It is assumed that the discussions of aims (4.2) and curriculum strategy (4.3) have been successfully resolved and with them the general role of the materials. What is still at issue is the detailed design of the materials. Our 'starter checklist' of issues for consideration in preparing Section 4.4 is given below. Again it is important to avoid repetition of points discussed in the earlier sections.

How do the materials measure up to common practical criticisms of similar or rival materials?
How accessible are the materials to various types of pupil in terms of (a) assumptions about prerequisites (b) comprehension (c) pacing (d) maturation?
How well is the pupil oriented towards what he is supposed to be learning and what its relevance is?
How appropriate is the structuring, frequency and difficulty level of pupil exercises?
Is appropriate use made of integrative and/or organising features such as overviews, conceptual maps and summary diagrams?
Is there sufficient use of examples and are the examples those best suited for developing the desired concepts?
To what extent do the materials
(a) reflect particular cultural environments or social contexts
(b) indicate prejudice or stereotyping
(c) imply a consensus on political or social issues?
What implicit values can be detected in the selection or interpretation of information?
Is the subject matter accurate and up-to-date?
Is the terminology and/or symbol system common or esoteric; and does it help or hinder understanding?
Are the materials easy to use in the classroom, and will they last?

00104

The last section, 4.5 is primarily concerned with questions of feasibility and takes into account the implications for implementation discussed in Section 3.4. Its purpose is to evaluate the proposals set out in 3.3 in the light of existing school practices, personnel and resources. Issues of cost, time, facilities, organisation and teacher knowledge, skills and attitudes all need to be dealt with. Since these have already been covered in Section 3.4 no further checklist is needed.

Throughout Part 4 the analyst has to decide how to present each evaluation issue. Bearing in mind that his role should be both neutral and penetrating, two possible approaches are recommended: one, which is probably more suited to rationale issues, is first to indicate the nature of the professional debate over a group of issues and then to show where the particular materials fit in; and the other is to outline arguments for and against the particular aspect of the materials or curriculum strategy under consideration. Whichever approach is used the weighting of separate criteria should be left to the decision maker and not pre-empted by the analyst; and if the analyst's judgement on a specific point is likely to be controversial, it is best to present an open verdict and to concentrate on presenting the relevant evidence.

PART 5. DECISION MAKING IN A SPECIFIC CONTEXT

Part 5 should only be completed by a member of the proposed user group. In some cases he may have been the analyst who prepared Parts 1 - 4, but often he will not be. In 5.1 he examines the freedom of manoeuvre within that particular school and the constraints in terms of resources, facilities, school aims and articulation with the rest of the school's curriculum. Then in 5.2 he selects one or more patterns of use which might be adopted by the user group. 5.3 suggests how the problem of implementation might be tackled and would need to be sufficiently specific to indicate who would be required to do what? Then 5.4 would be a summary of the main decision issues for that particular user group in that particular context. It might for example consist of a short set of questions such as:

Do we want this kind of approach?

Is it feasible?

Are these the best materials available?

00105

Have we the people to teach it?

Can we bear the cost?

accompanied by a brief summary for the arguments for and against, cross-referenced to the relevant sections of the analysis.

Conducting an Analysis

Individual analysts will always want to work in different ways, but it is nevertheless worth making some general suggestions about how they might proceed. For example it is not usually advisable to start at the beginning of the analysis scheme and work straight through it. At the very least it is helpful to go through the scheme twice, making general notes the first time and writing up each section in detail the second time. On the first run through it is probably best to follow the order of the scheme and to make preliminary decisions on each section on the points to be covered, the descriptive or evaluative categories to be used and the general approach to be adopted. It will then be clear on the second run through whether these preliminary decisions need altering in order to ensure that Part 2 provides the necessary evidence for Part 4, and that unnecessary overlap between sections is avoided, etc. There is an inevitable tendency towards repetition which stems from an exhaustive instrument whose categories by their very nature cannot always be rigorously separated. The remedy is to be aware of the difficulty and to use judicious cross-referencing, balancing the annoyance of too much repetition against the inconvenience of too much flipping backwards and forwards. For this reason we strongly recommend completing Part 2 first then Part 3, then Part 4 and finally Part 1.

Then lastly, there is the problem of communication. The analyst is urged to keep his potential readership in mind throughout and to adjust his linguistic style and his vocabulary accordingly.

00106

SUSSEX SCHEME FOR THE ANALYSIS OF CURRICULUM MATERIALS

DECEMBER 1974 VERSION

Part 1	INTRODUCTION
1.1	Basic Facts
1.2	Author's Rationale
1.3	Issues and Perspectives
Part 2	DESCRIPTION AND ANALYSIS OF THE MATERIALS
2.1	Description of Pupil Materials
2.2	Description of Teacher Materials
2.3	Structure of the Materials
Part 3	THE MATERIALS IN USE
3.1	Main Features
3.2	Possible Modifications and Additions
3.3	Patterns of Use
3.4	Implications for Implementation
Part 4	EVALUATION
4.1	Other Sources of Evidence
4.2	Evaluation of Aims
4.3	Evaluation of Curricular Strategy
4.4	Evaluation of Materials
4.5	Suitability for the Context
Part 5 (Optional)	DECISION MAKING IN A SPECIFIC CONTEXT
5.1	Constraints of the Particular Context
5.2	Possible Patterns of Use
5.3	Implementation Strategies
5.4	Summary of Decision Issues

00107

PART 1. INTRODUCTION

1.1 Basic Facts

1.1.1 State briefly the author(s), title(s), date(s), publisher and price(s). Where the material consists of more than one physical resource (e.g. a book, a tape, a set of slides or a pack of worksheets), list each one separately and indicate its size in terms of number of pages, number of items, minutes of running time, etc. Also state whether the resource is primarily intended for pupil use or teacher use.

1.1.2 What does the material, in its own terms, state to be its aim and function?

1.1.3 State briefly the target audience and situation; e.g. pupil's age, interests and ability range, examination orientation, type of school and course duration

1.1.4 What provision, if any, was made for testing the material in draft form and revising it prior to publication?

1.1.5 If it is helpful, prepare an informative appendix on the author(s) credentials and background. Include any other relevant publications; and, where an official project is concerned, its early history and original brief.

1.2 Author's Rationale

Summarise any explanation or justification for the materials provided by the author, either in the materials under analysis or, if particularly relevant, in other publications.

1.3 Issues and Perspectives

Indicate the main issues raised by the analysis.

PART 2. DESCRIPTION AND ANALYSIS OF THE MATERIALS

2.1 Description of Pupil Materials

2.1.1 Describe the content of the material, using any of the techniques listed below that seem appropriate.

Listing major topics; titles or groups of chapters; chapter headings; sub-chapter arrangement; recurring themes; topics listed in the index.

Sampling the material by selecting typical or important sections and describing their contents at a detailed level.

Indicating in quantitative terms the relative emphasis given to different aspects of the subject matter.

2.1.2 Describe the presentation form of the material, and relate it to the various categories of content.

2.1.3 Describe the pupil exercises or tasks that are included in the material; and indicate how frequently each type of task occurs and how the tasks are sequenced and/or repeated.

2.1.4 List any explicit statements on pupil assessment; and note examples of tests or assessment schemes (indicating both the nature of any specific assessment instruments and the structure of the assessment pattern as a whole).

2.1.5 List, summarise or describe any statements of purpose, aim or objectives included in the pupil material.

2.1.6 List and estimate the frequency and significance of directions to the pupil to refer to his teacher or to use special or relatively scarce facilities.

2.1.7 Where there is more than one physical resource, indicate the inter-relationships between them in terms of cross-referencing, sequencing and repetition, both of content and of pupil tasks.

2.2 Description of the Teacher Materials

2.2.1 Indicate where material for the teacher is to be found, and describe the content of the teacher's materials as a whole using any of the techniques listed under 2.1.1 that seem appropriate.

2.2.2 Describe the presentation form of the material.

2.2.3 Describe any additional pupil roles or tasks that are mentioned or included; and indicate the frequency and sequencing.

2.2.4 List any explicit statements on pupil assessment; and note examples of tests or assessment schemes (indicating both the nature of any specific assessment instruments and the structure of the assessment pattern as a whole).

2.2.5 List, summarise or describe any statements of purpose, aim or objectives that are included in the teacher's material; and indicate whether they refer to learning by (a) the pupil or (b) the teacher.

2.2.6 Describe the teacher tasks and roles that are stated in the materials; and indicate the extent of their demands on the teacher's time.

2.2.7 List any statements about the need for further resources or special facilities.

00109

2.3 Structure of the Materials

2.3.1 How do pupil materials and teacher materials fit together and are there any obvious points of conflict?

2.3.2 Describe the coverage of the subject matter in terms of knowledge, skills and attitudes. To what extent is the material explicitly concerned with the presentation of values or the development of attitudes?

2.3.3 Indicate the generality and the level of abstraction of the subject matter. Does it mainly consist of factual material or does it try to communicate specific concepts, general concepts or principles? What are the roles of illustrations, applications and examples? What kinds of argument are used and how much supporting evidence is given? Does it develop specific techniques or general patterns of behaviour?

2.3.4 What pre-requisite knowledge and skills are needed by the pupil?

2.3.5 How is the subject matter organised in terms of structure, sequence or cumulative build-up; and how do the pupil tasks change?

2.3.6 What image of the subject matter is most likely to be communicated? What are its boundaries and what are its chief concerns? What implicit values can be detected in the selection or interpretation of information?

2.3.7 How do pupil tasks and teacher activities relate to each other and how do they vary with the subject matter?

2.3.8 How is the assessment related to pupil tasks (congruency?) and to the subject matter (uniformity of emphasis?)

2.3.9 Where and if there are stated objectives how do these relate to pupil tasks and to the assessment pattern?

PART 3. THE MATERIALS IN USE

3.1 Main Features

Summarise the main features of the materials and the recommended pattern of use, indicating which curriculum decisions would be pre-empted by the decision to adopt the materials and which would still be the responsibility of the user group.

00110

The authors have found a curriculum model especially useful for bringing out the main features and their inter-relationships; and this approach is outlined in the Introduction and Guide. It is not built into the scheme because some authorities prefer to operate without such a model.

3.2 Possible Modifications and Additions

Describe ways in which the materials or the recommended patterns of use may be modified or supplemented when implementing a curriculum based on them. Indicate where there is no scope for alteration within the terms of the overall curriculum strategy, and note how much further curriculum planning is likely to be necessary.

3.3 Patterns of Use

Describe some possible patterns of use in the context of the overall school curriculum. Which pupils are involved and when? How does it relate to areas of the curriculum which come before it and after it? What, if any, modifications and additions are to be incorporated? What, if any, form of assessment is intended?

3.4 Implications for Implementation

3.4.1 How much teacher time is needed prior to implementation for activities such as gaining familiarity with the curriculum, further planning, and selecting or producing further materials?

3.4.2 How much of his time and energy is likely to be committed a) in the first year b) subsequently?

3.4.3 What are the implications for the school in terms of teacher provision, in-service training, special facilities and finance?

3.4.4 Discuss the implications for the pupil with reference to subject selection, examination focus and future employment.

3.4.5 What knowledge, skills and attitudes are demanded of the teacher?

3.4.6 Discuss the implications for the school in terms of school aims and the articulation of this curriculum area with those preceding, accompanying or following it.

3.4.7 Discuss the implications for the school district and the community in terms of attitudes, provision of in-service training and special facilities and finance.

3.4.8 What major problems are likely to result from implementation in probable non-ideal situations?

00111

PART 4. EVALUATION

4.1 Other Sources of Evidence

4.1.1 The development of the resource

(i) What evidence of developmental testing is available? (i.e. testing that is primarily intended to show how the resource can be improved).

(ii) Is there evidence that improvements resulted from the development phase?

4.1.2 Validation

(i) What reports are available from the author, publisher or independent evaluator?

(ii) Was the evaluation qualitative or quantitative?

(iii) What was the evidence of final validation?

4.1.3 What information about the users of the resource and their experience is available?

4.1.4 Where has the resource been reviewed and what were the major evaluative comments?

4.1.5 What unintended outcomes or side-effects have been reported?

4.1.6 Is there any evaluative evidence from comparable and similar resources?

4.1.7 The analyst is invited to comment on the evaluation evidence available in terms of its relevance to users supporting differing aims and strategies.

4.2 Give arguments for and against pursuing the particular aims endorsed by the material in this area of the curriculum. Relate your arguments to potentially competing aims, the patterns of use outlined in Part 3 and various forms of traditional practice.

4.3 Give arguments for and against the particular curriculum strategy assumed or advocated for achieving these aims, again relating your arguments to potentially competing strategies, the patterns of use outlined in Part 3 and various forms of traditional practice.

4.4 Evaluate the materials and their adequacy for supporting the aims and curriculum strategy.

4.5 Giving special attention to patterns of use (3.3) and implementation problems (3.4) evaluate the feasibility of using the materials in various contexts.

00112

CHAPTER 5: THE TRAINING OF ANALYSTS

The quality of an analysis will always depend on the knowledge, experience and ability of the analyst. So there is no theoretical limit to the amount of training which an analyst may receive. But, if the training is long, only a small part of it will normally be devoted to specific analytic techniques. Most of it will be spent in deepening the prospective analyst's understanding of curriculum problems and issues. As mentioned in Chapter 1, the project's experience with training analysts has been of two kinds: as one of four modules in a one-year full time M.A. course for experienced teachers, lecturers and advisors; and as a separate in-service training activity in the form of a 1 Week Workshop. Since Chapter 2 has already discussed possible roles and goals for these training activities, this chapter will concentrate on the training process itself, especially on the 1 Week Workshop. Unlike the longer course these workshops are concerned with curriculum analysis alone and not with any other form of curriculum study.

The Project's Rationale and Strategy for 1 Week Workshops

Our approach to the running of 1 Week Workshops for teachers was strongly influenced by previous work at Sussex in the field of in-service education (Eraut, 1972b), which had convinced us that in-service education was most productive when it stemmed from a problem of special concern to an individual school. Moreover, the role of the providing agent should be one of consultant rather than expert; and the activity should resemble cooperative problem-solving rather than the unilateral dissemination of "solutions". Experience in teacher centres had also shown that relatively unstructured discussions amongst teachers could help develop a self-questioning atmosphere, provided that they were ultimately directed towards some mutually agreed useful purpose. Too much structure stifles self-evaluation and the internalisation of ideas, but too little structure induces frustration and unease.

All these considerations led to the formulation of the following strategy for curriculum analysis workshops.

1. Analyses should be conducted in small groups both to gain maximum advantage of the atmosphere created by "peer-group discussions" and to achieve the divergent approach to evaluation advocated by the project (cf. Chapters 2,3 and 4).

00113

2. The choice of the material to be analysed should be based on the needs of the participant, the only restrictions on his choice being the desirability of incorporating him within a group (2 being the minimum size).

3. There should be delicate pressure in each group to complete an 'embryo-analysis' by the end of the week. (i.e. a draft analysis with most sections finished, even if some are only in note form.) This should be sufficient to maintain a sense of purpose and give a feeling of achievement without making the participants feel that they are being railroaded.

4. There should be very little structured input from the course leader, nearly all the structure being provided by the scheme itself.

5. The role of the course leader should be that of process-helper rather than expert, his attention being equally divided between the dynamics of the interactions within and between groups, the production of 'embryo-analyses' by each of the groups and the gradual development of understanding about the Sussex Scheme in particular and curriculum analysis in general.

For each participant, the minimum aim for the workshops would be that as a result of co-producing an 'embryo-analysis', he would:

(a) have greater understanding of some curriculum materials being used in or of special interest to his school.

(b) be able to complete the analysis on his own with no more than 30 hours of further work, and

(c) understand the Sussex Scheme and be able to use it without further help.

Beyond this minimum, we would hope that he had

(d) acquired a positive attitude towards curriculum analysis

(e) increased his understanding of curriculum problems in general

(f) become more self-evaluative, and

(g) formed relationships with the participants likely to be of value in the future.

Our experience with workshops shorter than a week in duration has confirmed our view that a whole week is essential, this being interpreted as about 30 working hours over a concentrated period -- either 9 a.m. - 5 p.m. for 5 days on a non-residential course, or mid-day Monday to mid-day Friday on a residential course which includes evening work.

Some critics have suggested that a more directed approach would allow the workshop to be shortened, but this fails to take into account the time which it takes even a self-selected and outstandingly intelligent group of teachers to become accustomed to the process of curriculum analysis. The only way to learn about curriculum analysis is to do it; and even the most sophisticated workshop participants, who have spent considerable time reading our papers beforehand, have confirmed this. Moreover, it takes at least two and usually three days for participants to realise the nature of the activity in which they are engaged and to grasp some of the key concepts and principles of the Sussex Scheme; e.g. the concepts of "issue", "curriculum strategy" and "pattern of use", the relationship between analytic description and evaluation, and the divergent approach to evaluation. This applies to teachers in colleges of education who are used to reading books and discussing issues at a relatively abstract level, as well as to school teachers for whom the whole vocabulary of the scheme, simple and practical as we have tried to make it, tends at first sight to appear like a foreign language. A course rather than a workshop would lead to assimilation and token understanding of the scheme, with little experience in trying to use it; whereas the full week of guided practice allows for the gradual accommodation of concepts and the proper internalisation of the scheme. We would also predict that forcing the pace would create strong antipathies in which the scheme's proponents were identified as 'ivory tower do-gooders'; instead of the slowly growing recognition, which results from the present less directive strategy, that there might be some people outside the classroom who actually had something to offer.

Although working in small groups may slow up the process of producing an analysis, it offers valuable psychological support in the early stages of the workshop when the participants are still trying to understand what analysis is all about and are therefore most susceptible to disillusion. They need to realise that their genuine difficulties are shared and not peculiar to themselves. As one participant said:

> "At the beginning of the workshop, I encountered four unknowns: the group in which I was to work, the materials I was to analyse, the scheme I was to use and the language of the curriculum specialist."

The group also exerts a broadening effect on almost all participants, especially if it is heterogeneous. The resultant analysis may be less complete than that produced by an individual, but the variety of

views will be greater and the chance of missing important points considerably reduced. The peer-group environment also increases the likelihood that the personal experience of the participants will be taken seriously and used to advantage, rather than disregarded because of the misguided view that more valid academic knowledge exists. Then finally, there is the analogy between the group in the workshop and a group of decision-makers in a school, with a workshop group providing a model of how a school might profitably decide whether to adopt, adapt, or reject some new curriculum materials.

An additional advantage of the group situation is that it eases the role of the workshop leader. He can sit with a group without interrupting the discussion and carefully assess whether he can help it along or would do better to leave it alone. His judgement as to who needs what kind of support when is enormously improved by this 'eavesdropping facility'.

The Preparation and Organization of Workshops

Recruitment to our workshops has hitherto been based on voluntary applications, secured through a combination of informal contacts via professional networks and selective invitations to heads of institutions. While the voluntary self-selection process ensured at least initial motivation, we used our publicity arrangements to try and achieve a heterogeneous group of between 20 to 30 people. This can be sub-divided into 4 to 7 analysis groups with 2 to 6 people in each. We have found that mixed groups of teachers, advisers and lecturers in colleges or universities are particularly valuable as each tends to contribute a different perspective to an analysis and they learn a great deal from each other. Where integrated curricula are being considered, an appropriate mix of subject specialisms is also desirable. We have yet to try a workshop in which all the groups analysed the same materials and compared notes at intervals; but we can see that it might have decided advantages. On the other hand there is a remarkable sense of common purpose when groups are working in quite different areas of the curriculum, derived perhaps from the feeling that all are engaged in the common task of replanning the whole curriculum.

00116

The period of contact before the workshop begins is of special importance both because it helps to establish the right relationship between the workshop leader and prospective participants and because it increases the likelihood of proper preparation. An initial letter to find out which material each participant would prefer to analyse can be followed up by a telephone call once the likely groupings for the workshop have become apparent. Since people prefer to work in groups it is usually not too difficult to negotiate a final decision which is compatible both with the needs of the participants and with the needs of the workshop. At the same time the workshop organiser has to make special enquiries about the availability of materials. Not all participants have to bring them to the workshop. Hence materials may have to be borrowed from the publishers, a local library, or a local education institution. This can take some time, so decisions on the analysis groups must be made relatively early.

Well before the workshop all participants are sent the following:

A short paper (4 pp.) entitled 'Aims for Curriculum Analysis Workshops', which incorporates some of the ideas in the last section of Chapter 2.

The Introduction and Guide to the Sussex Scheme (Chapter 4)

The Sussex Scheme itself (Chapter 4)

A sample analysis of materials likely to be of interest to each particular participant (i.e. different sample analyses are sent to different people)

A timetable for the workshop

A list of participants and probable analysis groups

In addition to sending these documents, we strongly advise all participants to familiarise themselves as much as possible with the materials they are going to analyse, especially with the teachers' manual if there is one. Inevitably we find in practice that some participants come unprepared, but the early contact has usually helped to encourage a reasonable level of preparation. The careful negotiation involved in forming the analysis groups also creates an initial atmosphere in which the participants 'already know' the workshop leader and feel that he is concerned for their own special problems.

00117

The advantages of making the workshop residential are threefold: more time is available for the analysis work itself; the participants can concentrate on the work without any external distractions; and there is greater time and opportunity for informal discussion. This last point is not insignificant because any group of teachers have a strong need for 'professional gossip' when they meet together and this activity plays an important role in forming useful professional links and in diffusing new ideas. Any in-service activity which allows it is helping to counteract the isolation of the teacher in his classroom; and to prevent it is usually to court disaster.

The workshop timetable should be fairly flexible as different groups seem to work in different ways and throw up different needs. We now feel fairly confident about the best way to organise the first two days and the last day, but always take the middle period of the workshop 'as it comes'. A typical timetable is attached as an appendix to this chapter. It only includes three plenary sessions; an introductory session in which the course organiser leads a discussion on the preparatory papers with special emphasis on the aims and usefulness of curriculum analysis; a final-day session in which the analysis groups report on their work; and an evaluation session in which the scheme, the workshop, and possible future activities are discussed.

The scheme itself is reintroduced, one part at a time, during the first half of the workshop. In each case there is a short presentation to indicate how some of the sample analyses sent to participants (and available for further inspection at the workshop) had tackled the problems posed by that particular part of the analysis scheme. This presentation varies from 10 to 30 minutes in length and is usually followed by a brief discussion, after which the participants disperse into their analysis groups. The precise timing of these 'inputs' on the scheme is not too critical, but we have found that allocating the remainder of the first day to the discussion of issues is always very successful. This aspect of the scheme is not too difficult to understand, all group members can participate readily and most of their initial reactions to the material can be translated into issues of some form or another. Starting with issues also gives a useful sense of direction to the rest of the analysis; and it is well supported by the checklists of evaluation points included in Chapter 4. We would also recommend completing the four short inputs on the scheme during the first half of the workshop so that the analysis groups can be given a long undistrubed period for producing their analyses.

00118

The introduction of 'work in progress' discussions into the middle of a workshop can also be beneficial, but they should be kept as brief as possible. If they are timetabled to start an hour before lunch or dinner it is easier to keep them to a reasonable length and informal discussion can continue subsequently over the meal. The decision to include such discussions is best made during the workshop itself whenever the organiser senses the need.

We have usually staffed the workshop with one full-time workshop leader and given him part-time support from a second member of the project team. But now that the developmental phase of the scheme and the workshop strategy is over we see no need for more than one.

His role as process helper, however, is not an easy one. In the early stages he is primarily concerned with seeing that all members feel free to contribute to their working groups, and that the groups use the knowledge and experience of members to the maximum advantage. He can help an 'awkward' group to establish a language for communication; and see that they discuss both practical and theoretical issues. In the next phase his main responsibility is to help the groups understand the scheme and sort out how they are going to apply it to their particular set of materials. In particular, terms like 'curriculum strategy' and 'pattern of use' often cause difficulty. Then in the final phase he has to provide gentle encouragement as the groups try and complete their analyses, and to discourage task-avoidance. Two special problems at this stage are the tendency for some groups to adopt a convergent rather than a divergent approach to evaluation, and a common failure to realise how much the analysis as a whole depends on evidence which can only be provided by a thorough description. Activities such as profile analysis (cf. Chapters 3 and 4) develop a deeper knowledge of the material, and the problem of finding suitable descriptors for categorising content, form and exercises forces the student into an analytic frame of mind.

Outcomes of the Workshops

We discussed seven possible aims for our workshops earlier in this chapter, but how realistic are they? It depends very much on the participant and his analysis group, and on the kind of material they were analysing; and this is especially true for the second aim of

00119

producing an 'embryo analysis' that was sufficiently complete to be capable of being finished within a further 30 working hours. This aim is only achievable with relatively compact sets of materials, as analyses of complicated packs for integrated humanities or language courses usually take much longer. All participants would agree that the first aim of acquiring greater understanding of a specific set of materials had been accomplished, and most would feel confident about using the scheme on their own even though they would prefer to work in groups and have access to expert advice.

We were, naturally, a little disappointed by the product outcomes since it was clearly impossible to produce a publishable analysis within a week. But we were more than delighted by the process outcomes. The evaluation sessions at the end of each workshop and the subsequent feedback from participants indicated that considerable progress had been made on all four of the aims 'beyond minimum'. All were enthusiastic about the activity of curriculum analysis and most saw potential applications to their own working situations. Many were self-questioning and prepared to discuss their personal classroom problems; and several valuable professional links were forged. We even received a number of unsolicited letters thanking us for the workshop and stating how valuable people had found it.

More Advanced Training

As mentioned earlier, additional training beyond the 1-week workshop needs to concentrate more on curriculum study in general and less on curriculum analysis in particular. There are many possible approaches to this problem and we would not wish to make any judgements on the basis of our own limited experience within the single context of the Sussex M.A. Course. What we would claim, however, is that a 1-week workshop of the type already described, and with an obligation to complete the 'embryo analyses' in the subsequent week can provide a remarkably successful start to such training, socially as well as academically. Published analyses can provide valuable support for courses of curriculum study; and the production of an analysis for final assessment can help bring such courses to a fitting conclusion. How best to construct such courses is, however, a problem which waits to be resolved by further research and development.

00120

Timetable for Curriculum Analysis Workshop

Monday	- - -		LUNCH	Introduction +	Formulating and using a set of issues *	DINNER	
Tuesday	Description & Analysis of the Materials *			The Materials in Use *			FREE
Wednesday	The Divergent Approach to Evaluation *			FREE			
Thursday							
Friday	PRESENTATION OF GROUP ANALYSES +			Evaluation of the Workshop and Discussion of Future Activities +			- - -

The above plan provides a framework for the week and will be adapted as required.

All blank periods are for the working groups.

+ Plenary Discussion

* 10 - 30 minutes formal input and short discussion, followed by dispersal into working groups.

001121

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001122

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00125

GLOSSARY

The sole purpose of this glossary is to explain how the authors have used certain technical terms. It is not intended to be definitive.

Adversary Model. An approach to evaluation modelled on legal procedures in which two opposing advocates argue the cases For and Against the programme* being evaluated (C.S.E., 1973).

Aims. Statements of long-term purpose which indicate the general direction in which one wishes to proceed.

Antecedents. Characteristics of the situation pertaining when a programme is first introduced. These include the initial knowledge, skills and attitudes of the participants; available resources; and contextual variables such as the school, its curriculum, organisation and aspirations, and also the wider community. In Stake's model for organising evaluation date (Figure 1, Page 14), Antecedents are contrasted with Transactions and Outcomes.

Assessment. The process, formal or informal, by which a pupil's progress is estimated. Though it is sometimes used more generally, we have used the term with exclusive reference to the assessment of pupils. The significance lies not only in the process itself but also in the attitudes it so frequently engenders in teachers and pupils.

Conclusion-Oriented Inquiry. A form of inquiry whose prime purpose is to arrive at generally applicable conclusions. It is characteristic of most scientific research but not the only valid form of inquiry, cf. Decision-Oriented Inquiry (Cronbach and Suppes, 1969).

Congruency Analysis. This term is used with specific reference to the comparison of Intents with Observations (Stake, 1967a). Complete congruency would indicate that everything took place exactly as intended.

Consistency Analysis. A form of Intrinsic Evaluation (q.v.) in which various aspects of a programme are compared in order to establish whether they are consistent with each other and with the overall aims of the programme.

Content Analysis. A form of Intrinsic Evaluation (q.v.) which concentrates on the content of a programme with the intention of describing its salient characteristics, ascertaining its accuracy and revealing the underlying assumptions of the author.

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* The term 'programme' is used to describe the entity being evaluated.

00126

Contingency Analysis. The detection and criticism of contingency assumptions. These are assumptions of the general form 'B is contingent on A', which means that if A happens then B will follow. Most actions or plans of action are based on assumptions of this kind, e.g. 'If I do this, then I will achieve that'; and it is the analyst's function to reveal them.

Curriculum. The set of broad inter-related decisions about what is to be taught and how it is to be taught, that characterise the general framework within which lessons are planned and learning takes place. A curriculum can be distinguished both from Aims (q.v.) which guide these decisions, and from Instruction (q.v.) which is usually necessary for implementing them (cf. Johnson, 1967). Curriculum decisions are often undocumented, in which case a model is useful for disclosing them. The model preferred by the authors (Figure 3, Page 41) divides curriculum decisions into four interdependent categories: Subject Matter; Objectives and Outcomes; Teaching, Learning and Communication Methods; and Pattern of Assessment. The term curriculum is used with reference to either a part or the whole of a school's curriculum, so when further clarification is needed, we have used the terms Part-Curriculum (q.v.) and Whole Curriculum (q.v.)

Curriculum Analysis. The process of analysing curriculum data. The evidence may be either documentary (q.v.) or empirical (q.v.); and there are many different methods of analysis, whose usefulness depends both on the nature of the evidence and on the goal of the analysis (cf. Chapter 2.).

Curriculum Criticism. A process, analogous to literary criticism, in which a critic analyses a curriculum in order to disclose its meaning (cf. Mann, 1969) or to make a general contribution to curriculum study. It is distinguished from Curriculum Evaluation (q.v.) by its freedom from any decision-orientation.

Curriculum Development. A process, including reflection, discussion and experiment, which leads to the formulation of a set of curriculum decisions. It is distinguished from Curriculum Design by its commitment to Formative Evaluation (q.v.), but otherwise the processes are similar. Both are largely explicit and often mask an attempt to break away from traditional curricula, which are usually neither developed nor designed. The term should not be regarded as synonomous with Curriculum Materials Development as curricula do not necessarily involve Curriculum Materials (q.v.). Nor should it be applied to Instructional Development (q.v.), the development of materials or lesson plans within an already defined curriculum strategy.

00127

Curriculum Evaluation. We have adopted Cooper's (1975) definition: "Curriculum evaluation is the collection and provision of evidence on the basis of which decisions can be taken about the feasibility, effectiveness and educational value of curricula". According to this definition the evaluator should stop short of passing final judgement though other authorities, notably Scriven (1967) think that the evaluator should "judge the worth" of a curriculum.

Curriculum Materials. Materials for either pupil or teacher or both which have a significant influence on decision-making at the part-curriculum level, e.g. textbooks and curriculum project publications. They do not include instructional materials of relatively small scope and coverage whose use could only be said to influence decision-making at the level of a single lesson, e.g. a film or a pack of workcards.

Curriculum Materials Analysis Scheme (CMAS). An organised set of questions and/or techniques designed for general and systematic application to given types of curriculum materials with the aim of elucidating and evaluating their most important characteristics.

Curriculum Strategy. In one sense this term is synonomous with Curriculum (q.v.) because we have defined a curriculum as a strategy. However, it is useful to be able to indicate that one wishes to emphasise only the broadest and most influential curriculum decisions. So we use the term Curriculum Strategy with this particular implication.

Decision-Maker. Anyone who is involved in deciding whether to adopt, adapt or reject a proposed curriculum; or in officially encouraging someone else to do so.

Decision-Oriented Inquiry. A form of inquiry whose main purpose is to inform a decision. It is no less rigorous than Conclusion-Oriented Inquiry (q.v.) but serves a different purpose. (cf. Cronbach and Suppes, 1969).

Documentary Evidence. Evidence available in written form. Documentary evidence about a curriculum can contain either curriculum plans or Curriculum Materials (q.v.). We have used the term to contrast with Empirical Evidence (q.v.) and therefore exclude documentary reports of empirical evidence.

Empirical Evidence. Evidence based on interview, observation or testing. We have used the term to contrast with Documentary Evidence (q.v.)

Formative Evaluation. Evaluation which is directed at improving a programme while it is still in the course of development, i.e. in the formative stages. The term is used to contrast with Summative Evaluation (q.v.) of a completed programme (cf. Scriven, 1967).

00128

Goal. A goal is what one is trying to achieve, a destination rather than an Aim (q.v.). The goals of a curriculum indicate its intended outcomes, not its ultimate purpose; and the goals of an analysis indicate what the analyst is trying to achieve within the analysis itself, not the ultimate purpose of the analytic activity.

Goal Analysis. A form of Intrinsic Evaluation (q.v.) in which one seeks to elucidate and criticise the goals of a programme (cf. Scriven, 1967).

Goal-Free Evaluation. A form of evaluation in which the evaluator deliberately remains ignorant of the goals of the programme in order not to be unduly influenced by them when looking for outcomes (cf. Scriven, 1972). It should not be confused with the concept of a goal-free programme.

Implementation. The process by which a programme becomes operational. It includes both planning decisions made immediately prior to the commencement of the programme and adjustment decisions made after the programme has begun.

Instruction. The process of teaching in a classroom. We do not use the term to imply that the process is teacher-centred, but rather to denote a level of decision-making (cf. Johnson, 1967). Instructional decisions include both lesson planning decisions and minute-to-minute decisions made 'on the spot' while a lesson is in progress. They are usually made within a framework of either explicit or implicit Curriculum decisions (q.v.).

Instructional Development. The development of materials or lesson plans within an already defined Curriculum Strategy (q.v.)

Intrinsic Evaluation. The evaluation of a programme in terms of personal experience and internal evidence alone (cf. Scriven, 1967). Normally it is used with exclusive reference to Documentary Evidence (q.v.).

Issue. We have used this term in a legal sense, so it refers to a matter under contention. Most decisions can be said to depend on the resolution of a relatively small number of issues, and an analyst should attempt to identify them.

Normative Model. A model which establishes a norm or standard. Thus it represents a view of what ought to happen, in contrast with an Empirical Model which seeks to describe what does happen.

Objectives. Intended Outcomes which are specified in advance in order to guide the implementation of a curriculum proposal. They are usually more precise than Goals (q.v.). Some authorities have argued that objectives should be based on intended performance rather than intended understanding, since only performance can be observed. Such objectives are usually referred to as Behavioural Objectives because they indicate the behaviour required of a successful performer (cf. also Tyler-Bloom Model).

00129

Outcomes. The results of a programme, whether planned or unplanned, desirable or undesirable, are described as outcomes. In curriculum models the term usually refers only to pupil outcomes (cf. Figure 3, Page 41), but in evaluation models (cf. Figure 1, Page 14) the term is used in a broader sense and includes, for example, institutional and community effects.

Part-Curriculum. Any significant segment of the Whole Curriculum (q.v.) e.g. Initial Reading, Middle School Mathematics, Integrated Humanities for Years 1 to 3 or 'A' level Biology, for which separate curriculum decisions are made.

Pattern of Use. Characteristic features of the way a set of Curriculum Materials (q.v.) are used in a school. These include timetabling; articulation with the wider curriculum context; pupil, staff and resource allocation; assessment procedures; and modifications to or deviations from the authors' recommendations. Though practice may differ considerably from school to school, it is usually possible to discern certain typical arrangements; and sometimes a pattern of use is recommended by the author.

Pre-empted Decisions. We have used this term to refer to decisions which have to be accepted when adopting a particular programme. Because of the range of decisions open to any user group, those already taken by the 'authors' of the programme will have been pre-empted . Pre-empted decisions may be either explicit or implicit within the programme, and altering one of them signifies Adaptation rather than Adoption.

Process-Helper. A consultant who helps a group to successfully complete a process such as developing or evaluating a new programme or making a decision. He does not supply expertise in the form of 'solutions' but assists the group in communicating with each other, asking the right questions, getting outside help if necessary, and moving on to the next stage of the process when it is appropriate to do so.

Rational Consumer. A user of educational programmes who makes decisions about their adoption, adaption or rejection on a rational basis. This involves collecting as much evidence as possible about programmes, considering possible options and relating them to the values of himself or his institution (cf. Figure 2, Page 20).

Rational Producer. Someone who produces programmes to service the needs of a 'rational consumer'. By definition, therefore, rational production cannot exist without a substantial number of Rational Consumers (q.v.).

Rationale. The underlying arguments which the proposer of a programme uses to support his case. Such arguments are likely to be based on a consideration of Aims (q.v.) an analysis of constraints and a set of Contingency Assumptions (q.v.).

Role. The role of an activity, such as Curriculum Analysis, (q.v.) is taken to refer to the context in which it takes place and the overall purpose which it serves within that context, i.e. to provide information of a certain kind to particular people in order that they might better make decisions about the curriculum.

Standards. This term is taken broadly so that it does not just refer to a particular standard, e.g. 90% on a certain test or class sizes of 30 or less, but to the whole frame of reference from which standards are drawn.

Subject Matter. Organised content is described as Subject Matter. So Subject Matter must have structure, but it need not be the structure of a single subject or discipline.

Summative Evaluation. The evaluation of a programme in its final form in order to provide evidence to decision makers, who may wish to adopt, adapt or reject it. The term is usually contrasted with Formative Evaluation (q.v.).

Teaching, Learning and Communication Methods. A broad term which is meant to include interrelated questions about teaching, learning and communication. It includes questions of group size, questions of teacher-pupil-resource interaction, questions of media and questions of language; and it is one of four elements in the authors' curriculum model (Figure 3, Page 41).

Transactions. The activities which take place as part of an educational programme. They are distinguished in Stake's model (Figure 1, Page 14) from Antecedents (q.v.) and Outcomes (q.v.).

Tyler-Bloom Model. A model of Curriculum Development, originally proposed by Tyler (1949) and also closely associated with Bloom (1971), in which the first stage involves the definition of Objectives in behavioural terms. After the selection and organisation of learning experiences, the final evaluation stage is intended to measure the extent to which the specified objectives have been achieved.

Whole Curriculum. The broad pattern of the curriculum i.e. the framework within which decisions at the Part-Curriculum level (q.v.) are made. It may be conceived either at the institutional level, where it is implicit in the timetable and academic structure, or at the level of an individual pupil, where it refers to the total academic experience of that pupil.

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00132